February 1958
JPH

AMERICAN

# Journal of Public Health

AND THE
NATION'S HEALTH

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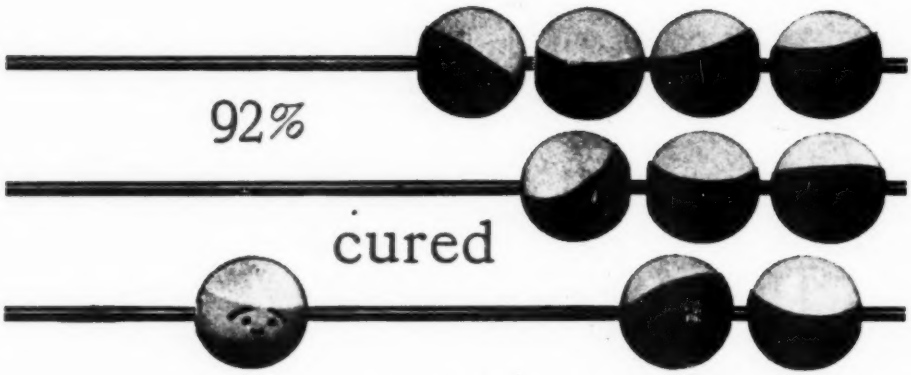


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1. Kuhn, B. H.: South. M. J. *49*:1122 (Oct.) 1956. • 2. Carrick, L.: J.A.M.A. *131*:1189 (Aug. 10) 1946. • 3. Hopkins, J. G., and others: A.M.A. Arch. Dermat. & Syph. *67*:479 (May) 1953. • 4. Sullivan, M., and Bereston, E., S.: J. Invest. Dermat. *19*:175 (Sept.) 1952.

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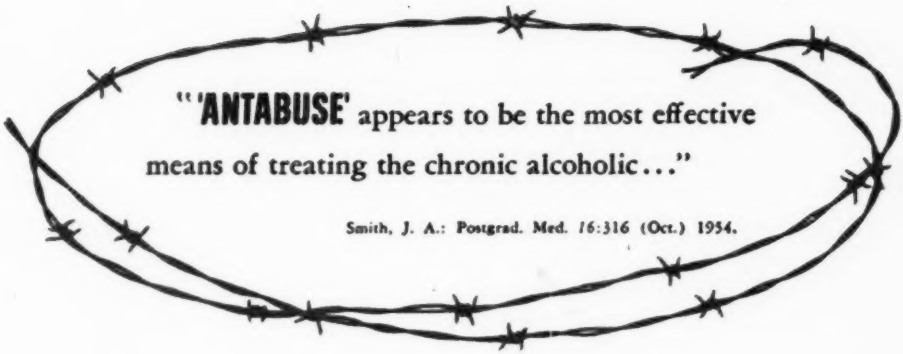


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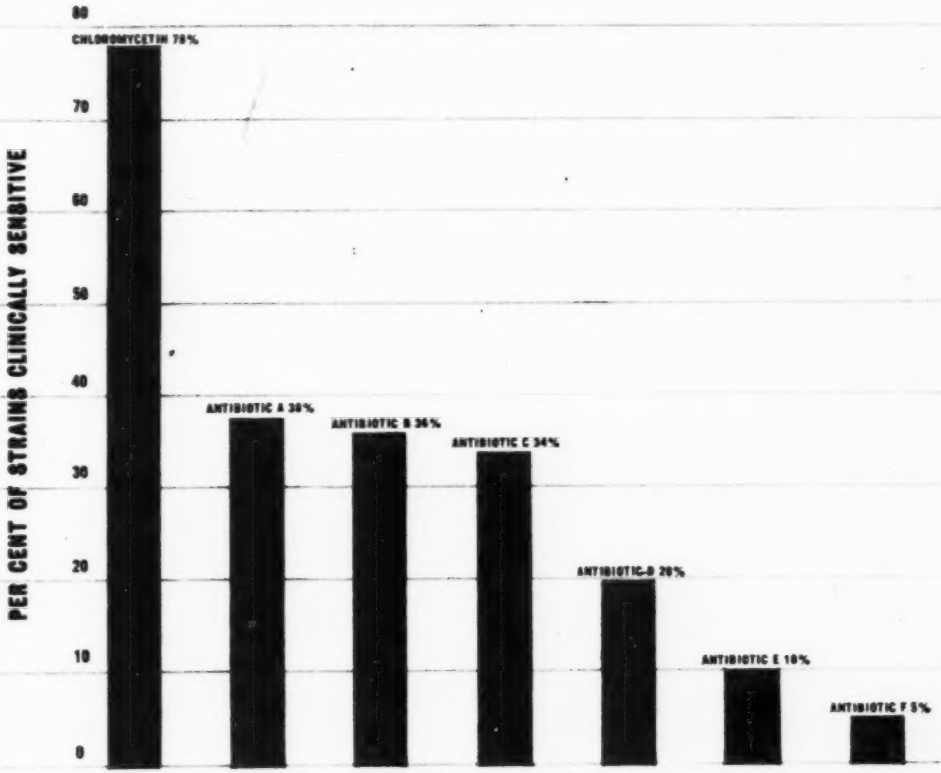


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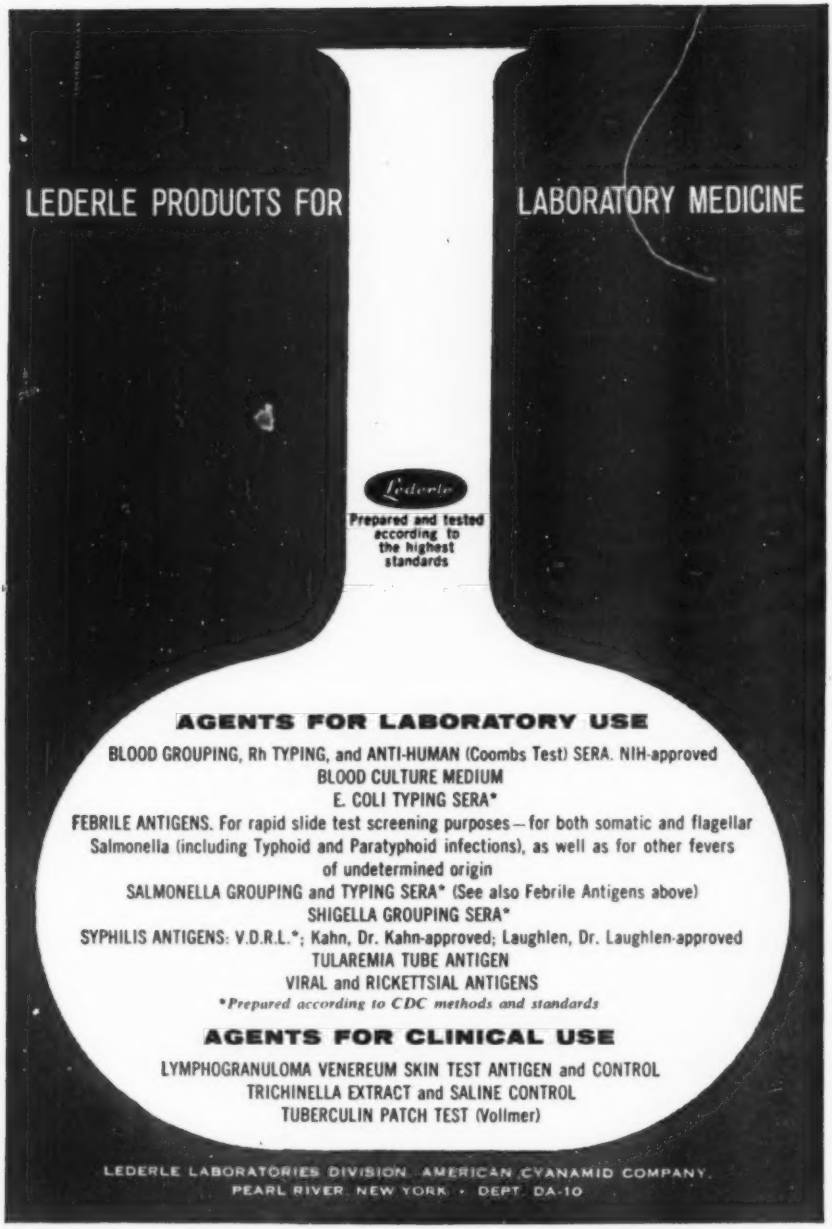
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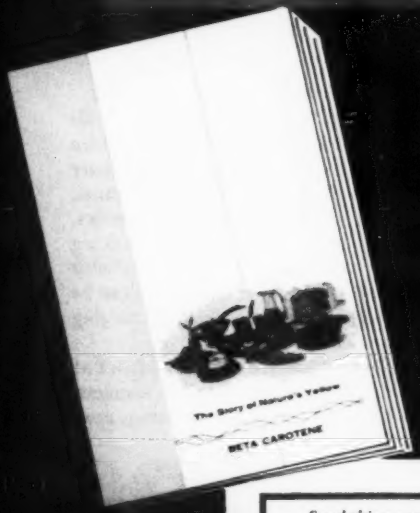


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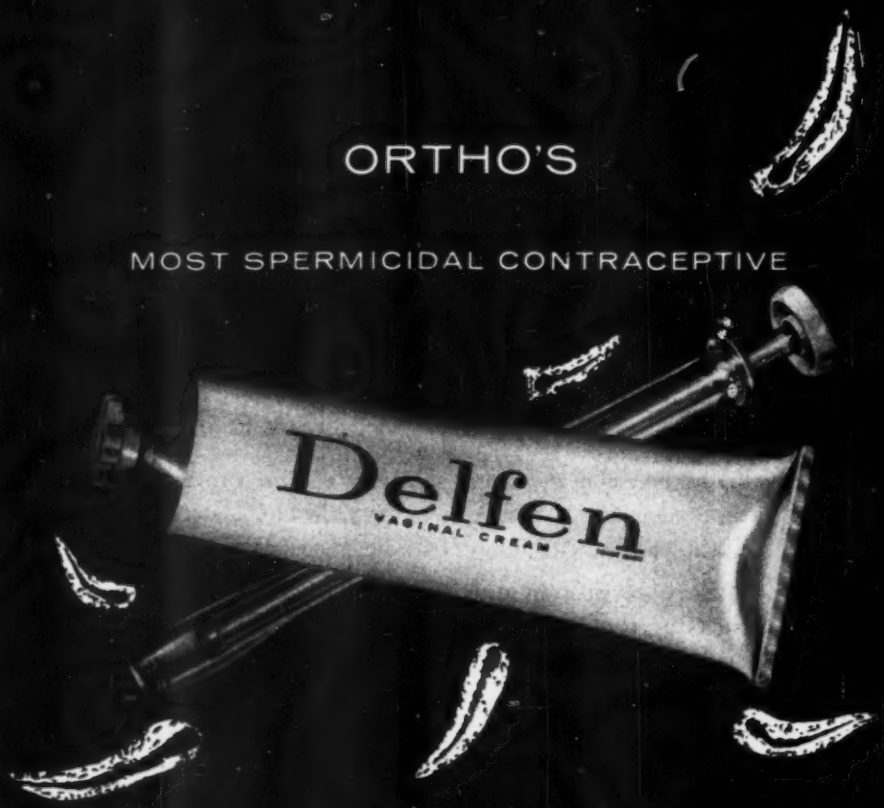


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*Bowes, A. deP., and Church, C. F.: Food Values of Portions Commonly Used. 8th ed. Philadelphia: A. deP. Bowes, 1956.*
*Cereal Institute, Inc.: The Nutritional Contribution of Breakfast Cereals. Chicago: Cereal Institute, Inc., 1956.*
*Hayes, O. B., and Rose, G. K.: Supplementary Food Composition Table. J. Am. Dietet. A. 33:26, 1957.*
*Cereal Institute, Inc.: A Summary of the Iowa Breakfast Studies. Chicago: Cereal Institute, Inc., 1957.*

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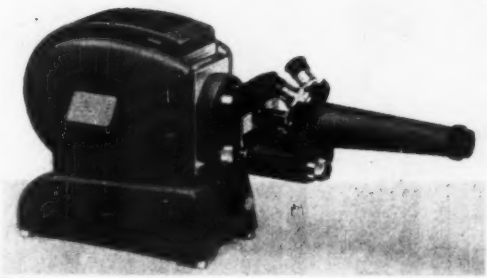

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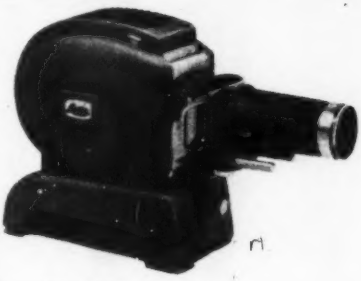

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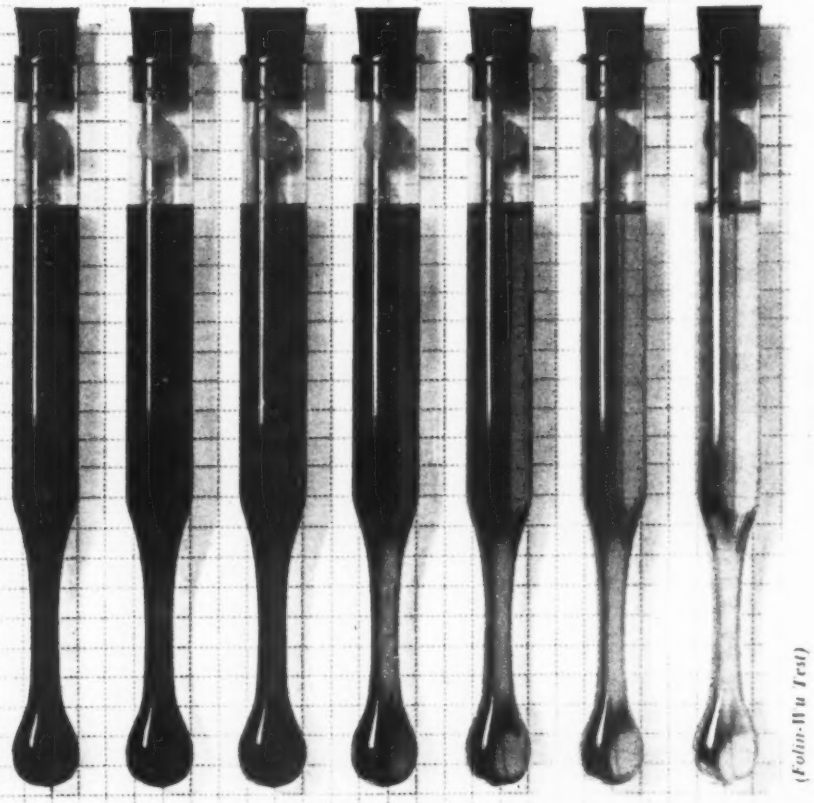

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Journal of Public Health

*The nature of the syphilis problem today is a matter of controversy. This article, proposing to abolish compulsory premarital blood tests, will undoubtedly add fuel to the fire.*

# SHOULD THE PREMARITAL BLOOD TEST BE COMPULSORY?

*I. W. Hedrich, Sc.D., F.A.P.H.A., and Charlotte Silverman, M.D., Dr.P.H., F.A.P.H.A.*

WHEN, ABOUT 1935, the compulsory premarital blood test issue began to be pressed upon state legislatures and health departments, the cure of syphilis still involved upward of 18 months of injections, once a week, with arsenicals or other toxic drugs. These prolonged, expensive, and sometimes dangerous treatments were often strenuously resisted by syphilitic patients, who frequently regarded the treatment as worse than the disease itself.

Today, a single injection of bicillin is effective. As a result, cooperation with medical and health authorities has improved tremendously. Moreover, it seems probable that some syphilis is cured accidentally through penicillin treatment of many nonvenereal infections.

The efficacy of penicillin was demonstrated by Mahoney in 1943, and by 1945 it had begun to be used very widely. But even before that date, a number of other important forces were at work. Beginning about 1935, under the effective leadership of Surgeon General Thomas W. Parran, newspapers, radio and magazines were persuaded to permit open discussion of the syphilis problem. Federal grants-in-aid were made to the states for intensifying programs of case finding, treatment, and public education. Moreover, the systematic examination and treatment of pregnant women was encouraged, and is now standard practice in many places. As a result of these various forces, the mortality and morbidity from syphilis have declined tremendously in the last two decades.

As the most dependable statistical measures of the decline of syphilis we have taken: first, the rate of mortality from syphilis in infancy; and as the second best index, the reported morbidity from syphilis in the primary and secondary stages. These two indexes are believed to be least affected by the distortions from multiple reporting and

**Table 1—Decline in Syphilis Mortality and Morbidity, United States Registration Areas, Selected Years 1910–1956**

| Year | Infant Mortality Due to Syphilis * | | Primary and Secondary Syphilis Cases Reported † | |
|---|---|---|---|---|
| | No. of Deaths | Death Rate | No. of Cases | Case Rate |
| 1910 | | 131.4 | | |
| 1915 | | 129.0 | | |
| 1920 | | 98.1 | | |
| 1925 | | 84.8 | | |
| 1930 | | 87.4 | | |
| 1935 | | 76.5 | | |
| 1940 | 1,251 | 61.9 | | |
| 1941 | 1,042 | 43.8 | 68,231 | 51.73 |
| 1942 | 845 | 35.7 | 75,312 | 57.07 |
| 1943 | 739 | 26.8 | 82,204 | 63.83 |
| 1944 | 746 | 29.1 | 78,443 | 61.69 |
| 1945 | 684 | 27.1 | 77,007 | 60.54 |
| 1946 | 538 | 22.0 | 94,957 | 70.94 |
| 1947 | 517 | 14.6 | 106,539 | 75.57 |
| 1948 | 438 | 13.5 | 80,528 | 55.89 |
| 1949 | 300 | 9.2 | 54,248 | 37.14 |
| 1950 | 201 | 6.4 | 32,148 | 21.57 |
| 1951 | 129 | 3.9 | 18,211 | 12.08 |
| 1952 | 92 | 2.8 | 11,991 | 7.87 |
| 1953 | 56 | 1.6 | 9,551 | 6.16 |
| 1954 | 43 | 1.2 | 7,688 | 4.87 |
| 1955 | 34 | 0.9 | 6,516 | 4.05 |
| 1956 | ‡ | ‡ | 6,757 | 4.16 |

* Rates prior to 1940 are from "Vital Statistics Rates in the United States, 1900-1940," Bureau of the Census, Table 14, p. 249.

Deaths and rates, 1940 through 1955, are from annual volumes of "Vital Statistics of U. S.," NOVS.

Mortality rates are per 100,000 population under one year of age.

† From "VD Statistical Newsletter Supplement, Reported Cases, 1941-1955" (July, 1956) and "VD Statistical Letter," Issue No. 51 (Nov., 1956), USPHS. (Data are based on fiscal years.)

Case rates are per 100,000. Populations are as of July 1, the start of fiscal year.

‡ The Monthly Vital Statistics Report, May 10, 1957 (NOVS) estimates 20 deaths from syphilis under age one in the United States for 1956 (Table 3, page 20). As this estimate is based on a 10 per cent sample, its variability is too large to justify estimation of a rate.

the late effects of syphilis contracted many years ago.

Figure 1 shows that the mortality of syphilis in infancy dropped appreciably during the decade beginning with 1935. The most rapid decline of all, however, came during the penicillin era since 1945 when the syphilis mortality of infancy dropped by more than a fourth annually on a geometric, or year-to-year basis. During the entire period from 1910 until the present, the syphilis mortality of infancy dropped from 131.4 to less than 1.0 per 100,000 infants, a decline of more than 99 per cent (Table 1). During the year 1955, 29 states reported not a single death from syphilis in infancy. Moreover, provisional mortality statistics for 1956 suggest that this rapid progress toward the vanishing point continued into 1956 unabated (footnote ‡, Table 1).

As to morbidity, Figure 1 and Table 1 indicate that the reported case rates for primary and secondary syphilis, all ages, although subject to the vagaries of

case reporting, have also declined at a very rapid rate.

Among young adults, the sharp decline of the prevalence rate of syphilis is shown in Table 2 by Army data. This table indicates that syphilis among selectees or inductees has declined by more than 95 per cent since World War II; namely, from 45.3 per 1,000 in 1941 to 1.6 per 1,000 last year. Granting that changes in Army policy as to admission of syphilitics into the Armed Forces may have introduced uncertainties into the data for certain years, the Army statistics are nevertheless consistent with the civilian data in indicating that the syphilis problem today is a very small fraction of what it was two decades ago, when compulsory premarital blood test legislation began to sweep through the land. Some recent publications, however, still cite syphilis rates of about 1941 as pointing to the magnitude of the syphilis problem.[1, 2]

## The "Rising Tide" of Syphilis

In Figure 1 and Table 1, it is seen that the rate of reported cases of primary and secondary syphilis did not decline in 1956; in fact, the reports indicate a slight rise.* Maryland is one of the states which recently showed a rise in reported cases. In our state, in-migration of nonwhites from the South probably was a factor in this rise. It seems likely, however, that a more

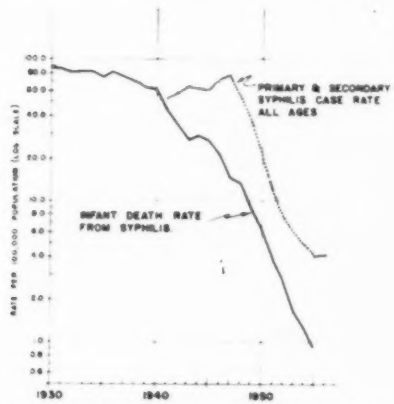


**Figure 1—Infancy Death Rates from Syphilis; and Reported Case Rates all Ages for Primary and Secondary Syphilis, U. S. Registration Areas, 1930–1956**

**Table 2—Prevalence of Syphilis Among Armed Forces Inductees, Available Years, 1941–1956**

| Year | No. Infected per 1,000 Inductees |
|---|---|
| 1941 | 45.3* |
| 1943 (March–December) | 32.3† |
| 1944 (August–December) | 22.8 |
| 1945 | 23.4 |
| 1946 (January–October) | 10.9 |
| 1947–1949 No data | .... |
| 1950 (August–December) | 4.2 |
| 1951 | 3.7 |
| 1952 | 2.2 |
| 1953 | 1.2 |
| 1954 | 1.5 |
| 1955 | 1.2 |
| 1956 | 1.6 |

* Data for 1941 are from the chapter on Syphilis by E. Gurney Clark in Maxcy (Rosenau) "Preventive Medicine and Public Health" (1956 ed., p. 265). Rates apply to selectees and volunteers. For whites, the rate was 17.4 per 1,000 and for nonwhites, 252.3.

† Data for 1943, et seq., are quoted from a letter from Eugene Hamilton, chief, Medical Statistics Division, Office of the Surgeon General, Dept. of the Army. He writes that "at the beginning of World War II, registrants with syphilis were not acceptable for general military service. In December, 1942 . . . an Army directive was issued to authorize induction of registrants with syphilis, except cardiovascular, cerebrospinal and visceral."

* The United States increase of 241 reported cases of primary and secondary syphilis during 1956 is more than accounted for by a puzzling increase in South Carolina from 105 reported cases to 564 during the year. In only five states did the reported incidence increase by as much as 50 cases (South Carolina, Illinois, Georgia, Maryland, and Massachusetts.)[7]

A letter received December 23, 1957, from Dr. R. W. Ball, chief, Venereal Disease Section, South Carolina State Board of Health, attributes the sharp 1956 rise in cases in that state to an intensified case-finding program. Dr. Ball adds his own conclusion that the compulsory premarital blood test law is not justified in his state.

important factor in most states was a heavy increase in the young adult population, the most rapid known in our history. We have estimated [3] that in the current two-year period, the population of 16-year-olds in Maryland is increasing by fully one-third, due to the sharp increase of the birth rate in the early 1940's. This heavy increase in young adults will doubtless have a retarding effect on the decline of syphilis morbidity, but we thoroughly agree with the statement by Moore [4] that the facts do not justify the recent alarm as to a "rising tide" of syphilis.[5]

## Does the Compulsory Premarital Blood Test Reduce Syphilis Rates?

After Connecticut adopted the compulsory premarital blood test in 1935, compulsory legislation was extended rapidly to other states under the influence of intensive publicity campaigns and pressure from lay organizations. Nelson [6] indicated that in few, if any, states was compulsory legislation sought by state medical or public health authorities.

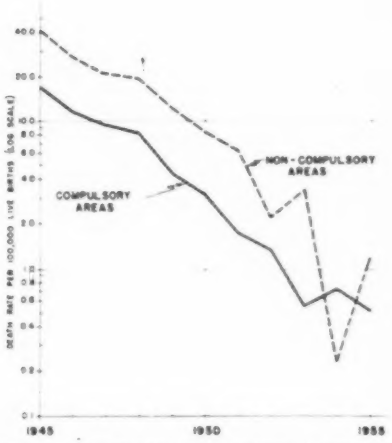


**Figure 2—Decline of Infant Mortality from Syphilis in 30 Areas with the Compulsory Premarital Blood Test, and in Nine Areas Without the Compulsory Test; 1945–1955 (Log Scale)**

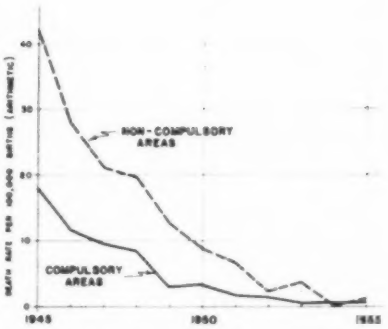


**Figure 3—Decline of Infant Mortality from Syphilis in 30 Areas with the Compulsory Premarital Blood Test, and in Nine Areas Without the Compulsory Test; 1945–1955 (Arithmetic Scale)**

Before 1945, a total of 30 state legislatures had enacted a compulsory law. During the next decade, ten additional states adopted such laws. Through 1955, however, nine areas had persistently refused to adopt a compulsory law. Listed in rough order from north to south, these noncompulsory areas were: Minnesota, Washington, Nevada, Maryland, the District of Columbia, South Carolina, Arizona, New Mexico, and Mississippi. It will be noted that these noncompulsory areas were mainly in the South, all except Minnesota and Washington having appreciable proportions of nonwhites. Since the South has always had relatively high syphilis rates, it follows that the noncompulsory areas, predominantly in the South, have had higher syphilis rates than have the compulsory areas. More significant to this discussion, therefore, is the question of whether syphilis has declined as rapidly in the noncompulsory areas as in the states which adopted the compulsory premarital blood test.

Figure 2, which is drawn on a loga-

**Table 3—Decline in Infant Mortality from Syphilis in States With and Without the Compulsory Premarital Blood Test**

| Year | Compulsory Areas * | | Noncompulsory Areas † | |
|---|---|---|---|---|
| | Infants Deaths | Death Rate ‡ | Infant Deaths | Death Rate ‡ |
| 1945 | 329 | 17.3 | 125 | 42.6 |
| 1946 | 270 | 11.6 | 94 | 27.5 |
| 1947 | 250 | 9.5 | 81 | 21.2 |
| 1948 | 213 | 8.5 | 73 | 19.8 |
| 1949 | 131 | 4.5 | 48 | 12.8 |
| 1950 | 82 | 3.28 | 32 | 8.55 |
| 1951 | 47 | 1.78 | 25 | 6.32 |
| 1952 | 37 | 1.36 | 9 | 2.22 |
| 1953 | 15 | 0.55 | 14 | 3.42 |
| 1954 | 21 | 0.73 | 1 | 0.23 |
| 1955 | 15 | 0.52 | 5 | 1.16 |

* "Compulsory Areas" are 30 states which adopted the compulsory premarital blood test before 1945. These states in approximate order of effective date are: Connecticut, Illinois, Wisconsin, Michigan, Rhode Island, New Jersey, New York, New Hampshire, Oregon, North Carolina, West Virginia, North Dakota, South Dakota, California, Colorado, Indiana, Pennsylvania, Virginia, Kentucky, Iowa, Maine, Tennessee, Utah, Vermont, Ohio, Idaho, Wyoming, Massachusetts, Nebraska, and Missouri.

Dates of adoption are in "Premarital Health Examination Legislation," USPHS, 1954.

† "Noncompulsory Areas" are nine areas which had not adopted the compulsory premarital blood test prior to January, 1956, i.e., Arizona, District of Columbia, Maryland, Minnesota, Mississippi, Nevada, New Mexico, South Carolina, and Washington State. (Dr. Robert D. Wright, regional director of the Public Health Service, advises that Arizona and New Mexico have adopted the compulsory legislation since 1955.)

Ten states which adopted the compulsory test between 1945 and 1955 are not included in this table. They showed practically the same rate of decline in infant mortality from syphilis as the two groups given here.

‡ Infant death rate from syphilis per 100,000 live births.

rithmic or ratio scale, shows clearly that percentage-wise, the death rate from syphilis in infancy declined during the last decade fully as rapidly in the nine noncompulsory areas as in the 30 states in which the premarital blood test was compulsory during the entire decade 1945–1955. For recent years the small numbers of syphilis deaths have made the curves somewhat erratic. For example, there was only one death from infant syphilis in the nine noncompulsory areas in 1954. It is clear, nevertheless, from the figure and from Table 3 that the infant mortality from syphilis declined during the last decade by about 97 per cent in both compulsory and noncompulsory areas. (A breakdown of the figures by race, not shown here, indicates that this equality of decline between compulsory and noncompulsory areas held for each race.)

Figure 3, showing the same comparison as Figure 2, but on an arithmetic scale, indicates that the arithmetic or absolute decline was decidedly the greater in the noncompulsory areas.

The reported morbidity of syphilis in primary and secondary stages dropped from 1945 to 1956 by approximately equal amounts in both types of areas; viz. 93.5 per cent in the compulsory areas and 93.3 per cent in the noncompulsory.

To sum up: The statistical evidence suggests that at least during the last decade the mortality and morbidity from syphilis were not influenced greatly by the compulsory premarital blood test. The tremendous declines observed

seem attributable to other factors such as intensified case finding, the widespread examination and treatment of pregnant women and particularly to improved therapy with penicillin.*

## Financial Costs of the Blood Tests

In the "compulsory" areas more than 2.5 million persons marry annually. Assuming a medical and laboratory cost of only three dollars per person, the total cost of the compulsory premarital blood test in the United States exceeds 7.5 million dollars per year, without administrative overhead.

In California, Condit and Brewer [8] reported that as long ago as 1951 the cost of finding an unknown case of syphilis [whether infectious or not] was $2,741 and was rapidly rising. By now, this cost must at least have doubled.

In upstate New York, the cost has been even higher. Unpublished data [9] indicate that in 1954 the number of previously unknown infectious cases of syphilis revealed to the State Health Department by means of the compulsory premarital blood test was less than one per 10,000 persons examined. It has been emphasized that the reporting of these positives is incomplete. Nevertheless, the cost of finding an infectious case by this method by now probably exceeds $25,000. In Saskatchewan,[10] from 1951 to 1955, out of 67,561 premarital tests 36 previously unreported cases were found, of which only three were in the early, infectious stages, less than one per 20,000 examinations. Obviously, as syphilis becomes rarer, these costs per case found are destined to become astronomical.

## False-Positive Reactions to the Blood Test

From the time the first serologic test for syphilis was developed 50 years ago up to the present day, nonspecific testing materials have been used in standard laboratory procedures for the diagnosis of syphilis. That these tests have sometimes led to false-positive findings has been known for many years. The hope of a specific test for syphilis seemed realized when in 1949 Nelson and Mayer [11] developed the Treponema pallidum immobilization (TPI) test. This was followed by the Treponema pallidum complement-fixation (TPCF) test and related procedures. Unfortunately, none of these refined and specific tests for syphilis has proved capable of giving unequivocal results. In the words of Magnuson and Portnoy,[12] "the fond dream of many clinicians that some one test represents the single definitive procedure seems doomed to failure. It is more likely that one or more of the treponemal tests can be expected to reduce the margin of diagnostic error but never to eliminate it."

Within recent years, the problem of biologic false-positive reactions has received increased attention. The marked decline in syphilis prevalence has not been accompanied by a similar decline in the prevalence of false reactors, with the result that the relative number of such false reactions has been increasing.

In 1950, Mohr and his associates [13] reported that in a group of private patients who seemed by careful clinical and laboratory investigation to have late latent syphilis, 24 per cent had negative reactions to the TPI test. This year, in six counties of Maryland, more than

* At the presentation of this paper, a discussant pointed to the opposing viewpoint of Magnuson, et al.,[20] who concluded that after, and because of, introduction of the compulsory premarital blood test, the infant mortality from syphilis declined faster than before. We question that conclusion (a) because expectancies of Magnuson, et al., being projections of only three years of data, are inadequate,[21] and (b) particularly because the credit which they give to the premarital test could, by use of their data and the post hoc reasoning employed, be attributed with equal force to the prenatal test and to other causative factors.

8,000 Negro residents participated in a blood testing survey. In this so-called high prevalence group which would be expected to have relatively few biologic false-positive reactors, 12 per cent of those found positive to standard serologic tests had negative reactions to the TPCF test.[14]

The lack of agreement among serologic tests is evident, as is the inescapable need for repeated and often extensive investigations to determine the true significance of a single positive serologic test for syphilis.[15]

The impact of a false label of syphilis may be shattering, as some recorded case histories have indicated.[16] The present-day benefits from blood testing of low prevalence groups must be weighed against the damage resulting from an increasing proportion of false-positive reactions.

## Views of Other Professional Groups

Numerous professional individuals and groups have for some time questioned the justifiability of the compulsory premarital blood test for syphilis. Nelson,[6] in 1947, when he was director of the Bureau of Venereal Diseases of the Baltimore City Health Department, prepared what has become a classic statement, titled "Why Is a Premarital Blood Test Law Unsound Legislation?", for presentation to the Maryland State Legislature. He effectively pointed out that this type of legislation fails to accomplish each of its four stated purposes: it is an inefficient way of finding cases of syphilis and preventing further spread; it rarely prevents infection of the marital partner; it does not contribute materially to the prevention of congenital syphilis; and it does not educate the public about syphilis because it perpetuates the misunderstanding that syphilis can be controlled by making tests.

At a symposium of the American Academy of Dermatology and Syphilology on compulsory blood testing last year, it was concluded that careful epidemiologic studies, not assumed theories, are urgently needed either to confirm or refute the value of the compulsory premarital blood test.[17]

At a meeting of public health statisticians of the New England and Mid-Atlantic States in New York in September, 1956, it was concluded that the premarital blood test was no longer justified and that repeal of laws requiring it was in order.[18]

At the Third National Conference of State and Territorial Epidemiologists held in Atlanta in April, 1957, extensive discussion followed the report of the group assigned the subject "Should Premarital Blood Tests Be Compulsory?" The report, as first prepared, answered this question in the affirmative, but it was subsequently amended because discussion failed to reveal any evidence for the effectiveness of premarital blood testing at the present time. The report finally recommended that the premarital blood test should be compulsory only if it is necessary to secure or maintain other desirable premarital legislation.[19]

## Summary

In this report the advances in syphilis control and their remarkable accomplishments during the past two decades are reviewed. Using syphilis mortality in infancy and syphilis morbidity in the infectious stage as two measures of progress, it is pointed out that there has been a precipitous decline in recently acquired syphilis in the country as a whole.

The percentage decline has occurred equally in states without a compulsory premarital blood test law and in states with such a law. During the last decade, the infant death rate from syphilis declined by slightly more than 97 per cent

in both compulsory and noncompulsory areas. Similarly, the reported morbidity rates in the primary and secondary stages of syphilis dropped in the compulsory areas by 93.5 per cent and in the noncompulsory by 93.3 per cent, from 1945 to 1956.

These findings suggest that the compulsory premarital blood test laws exert very little influence on syphilis mortality and morbidity. Other factors such as prenatal blood testing, improved case finding, and particularly penicillin treatment have more likely been responsible for the rapid decline in syphilis.

Furthermore, premarital blood testing reveals so few infectious cases of syphilis as to make it an unproductive method of case finding as well as an enormously expensive one. Added to these deficiencies, is the increasing problem of false-positive reactions in blood tests, a problem which will become even more serious as syphilis declines further.

For these reasons, it is our conclusion that compulsory premarital blood test laws may create more penalties than benefits for our population and can no longer be justified.

ACKNOWLEDGMENT—Appreciation is expressed to Robert Miller, statistician in the Division of Vital Records and Statistics, for cooperation in preparation of this paper.

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*Mental health and disease will undoubtedly be a major area of community health action in the years ahead. Such action will have to be based on knowledge and understanding, much of which is still to be obtained. Dr. Felix shows how the National Institute of Mental Health is working to meet these needs.*

# PROGRAMS AND ACTIVITIES OF THE NATIONAL INSTITUTE OF MENTAL HEALTH RELEVANT TO CHILDREN AND CHILD CARE

*Robert H. Felix, M.D., F.A.P.H.A.*

THE NATIONAL Institute of Mental Health is an organization for research in mental health and illness, training of mental health personnel, and for the provision of consultant services, essential for the implementation of these and other research findings in the field of mental health. Much of the Institute's work, in research, training, community services, and special areas of study bears directly on the mental health of mothers and children.

In research the Institute is conducting and supporting 139 projects concerned with childhood development and behavior, including such problems as juvenile delinquency, mental retardation, and emotional disturbances in children. Thirty-two of these are part of the Institute's own research program conducted at Bethesda, while the others are supported by NIMH grants in medical schools, universities, clinics, guidance and counseling centers, hospitals, and other nongovernmental institutions over the country. Twenty per cent of all the Institute's grant-supported research is devoted to studies of child development.

A total of 36 grant-supported projects directly relate to school mental health. A large proportion of the money allocated for these projects (71 per cent in 1956) is for studies bearing on the mental health of all school children. The rest is being spent on projects relating to services for school-age children with mental health problems. One such study is concerned with school phobia, an unreasoning fear of school observed in some younger children, which appears to be related to unconscious overprotective attitudes of the mothers.

There are also a considerable number of projects concerned directly with emotional disturbances in children. These range from studies of severe disturbance in preschool children to the relationship of temperament to the child's ability to cope with his problems. Among the research projects in this area are studies on sense of reality in schizophrenic children, play patterns in schizophrenic children as compared with normal children, psychosomatic disorders of children, and a study of autistic children.

The Institute is also supporting a number of studies related to the field

of normal and abnormal child development. Some of these are investigating parental influence on the child's personality, perceptual and personality changes in children, longitudinal studies of child growth and development, fear, aggression and dependency in chidren, and means of improving the social development of rejected children as well as of developing self-control in children.

In its own research program at the Clinical Center scientists in the Child Development Section are conducting a series of meticulous studies through which they hope to gather scientifically accurate facts on mother-child relationships and on the effect of early environmental factors on intellectual and personality growth. Seeking basic information on normal child development, these psychologists are working with normal, healthy babies and their mothers. In their research on mother-child relationships, they have set up separate studies on the personality characteristics of the babies themselves, on the mothers' attitudes toward their babies before and after birth, and on how mothers and children relate to each other at different stages in the child's development.

In order to record and compare accurate data on the emotional variables that enter into the mother-child relationship, these experimenters have worked out a method whereby they can observe and record the psychologic factors involved. With this technic they can study the parents, the children, and the interaction effects of different kinds of parents and different kinds of infants on each other. By recording such data on sample populations of mother-child pairs as the children grow into adulthood, it should be possible, in time, to determine what factors in this relationship lead to either adjusted or maladjusted behavior in later life. Needless to say, this kind of scientific knowledge would provide accurate premises on which to base preventive and therapeutic measures and to improve children's mental health.

A vast amount of research data on the mother-child relationship is already available to the Institute from the Berkeley Growth Study where records have been kept on children studied from birth to from 18 to 25 years of age. Institute scientists are analyzing these records and using them in designing procedures for new longitudinal studies in this field.

At its Mental Health Study Center in Prince Georges County, Md., the Institute is conducting long-range studies in the area of community mental health. This county, located on the outskirts of Washington, D. C., provides a laboratory which lends itself especially well to population studies in mental health. Within it are both urban and rural communities and areas with widely differing socioeconomic conditions. One of the center's research projects, now in its third year, is the gathering of county-wide data on reading disability among school children. The study is designed to get at the facts about the psychologic and sociologic factors involved in this problem. The investigators have made a comprehensive survey of the level of reading ability in the county as a whole and also by geographic units and have found that there are great differences from one area to another. Maps of the county portraying several levels of reading ability reveal well defined clusters of high performing schools and equally well defined clusters of low performing schools. Those that rated high or low in reading ability corresponded in general with neighborhoods rated high or low by the National Capital Park and Planning Commission when surveyed according to the quality of housing, population density, and rate of social assistance and juvenile court cases. The apparent connection between reading

disability and the socioeconomic conditions under which children live will be studied further this year.

To people working in public health, the frustrating business of trying to accomplish what is crying to be done without half enough people to do it is an old story. This is the situation with regard to trained personnel in all the professions that deal with mental health and mental illness. To make matters more difficult, there is also a shortage of training facilities, of specialized courses, and of instructors qualified to teach such courses. Few teachers' colleges, for instance, can offer the kind of special training needed to teach children who are mentally handicapped or those with serious emotional disorders.

To help overcome this situation the NIMH has provided grant support on a graduate level for teaching and traineeships and has also provided senior stipends in the mental health disciplines. Recently teaching grants on an undergraduate level in psychiatry and psychiatric nursing have also been made available. In 1958 a limited program, providing teaching and graduate stipends for doctoral programs, will be initiated. The purpose of this program is to train personnel to do research in such areas as the study of personality, child psychology, and physiologic, social, and experimental psychology. It will provide support to training for research or service roles in specific areas, such as mental retardation and delinquency. Altogether, since the Institute's grants' program started in 1947, about 4,000 persons have received support for training in the mental health field.

There are several projects supported by NIMH grants in which programs are being developed to train psychologists, teachers, social workers, therapists, and other professionals in the care and treatment of retarded, delinquent, and emotionally disturbed children. One is at the George Peabody College for Teachers at Nashville, Tenn., another at the Judge Baker Guidance Center at Boston, Mass. The Institute has also supported seminars at which pediatricians, teachers, health workers, and others who work with the mentally retarded can learn about the latest findings in research, care, and treatment of the retarded.

These are just a few examples of how the Institute's training program benefits services for mothers and children. In addition, grants are directly responsible for the inauguration of mental health curriculums for all student health officers in the 10 schools of public health in the United States.

In addition to its research and training activities, the Institute helps in supplying better services to mothers and children by giving financial assistance to the states through its grants-in-aid program. Funds supplied by NIMH have helped the states to develop new community mental health programs and expand their old ones. Mental health clinics which include direct and indirect services to mothers and children have been established and extended in many of the states. Consultation by the professional staff of these clinics enables other community agencies, such as the schools, social agencies, and courts to provide services to mothers and children. Stimulated by the federal programs, more states are now giving attention to the care, treatment, and education of mentally retarded children. A number have appropriated funds for increasing community mental health services. Seven states have passed legislation establishing a permanent system of state aid to local units of government for the support of community mental health services—New York, Connecticut, Indiana, California, Minnesota, New Jersey, and Vermont. Whatever is done to promote better mental health in our communities is of benefit to the parents and children who live in these commu-

nities. I should mention, however, that many more mental health facilities and services are needed in the states and communities of our nation.

In addition to funds, the Institute provides technical assistance to the states through its staff of mental health consultants at headquarters and in the departmental regional offices throughout the country. The mental health staff in the regions work closely and share information with representatives of the Children's Bureau, the Office of Education, and other federal agencies concerned with the welfare of mothers and children. The Institute's Community Services Branch has recently expanded its efforts through the inauguration of a series of special projects and demonstrations. One of these, a school mental health demonstration project which will involve two Florida counties, is a good example of how the National Institute of Mental Health works with state and local agencies to develop mental health programs for children. It is sponsored by the Community Services Branch of the National Institute of Mental Health, the Florida State Board of Health, and the Florida State Department of Education. Working with them are the two county school systems and county health departments.

The project is designed to show how a rural or semirural county too small in population to support a mental health clinic can develop a workable school mental health program by the addition of one clinically trained mental health specialist and the better utilization of present public health and education resources. With the help of NIMH specialists in school mental health, one of the counties has already set up such a program. It makes use of the same well established public health case-finding practices that are used in regular school health programs, but adapts them to identifying and dealing with minor emotional disturbances in children. The school and public health personnel are also utilized for this program in much the same way they are employed in a regular school health program.

Two NIMH participant-observers assigned to this project will prepare a descriptive report for publication. Next year they will work with the school and public health people in the second county in developing a similar school mental health project that can be used for demonstration purposes.

The NIMH also carries on a wide range of activities in connection with special mental health problem areas, such as juvenile delinquency, rehabilitation of mental patients, aging, drug addiction, and mental retardation.

A problem that plagues all of us who are interested in the welfare of children and young people is that of juvenile delinquency. Experts in the various disciplines concerned with human behavior have been trying, through various kinds of research to get at the causes of deviant and antisocial behavior among juveniles. It is a general belief among scientists that the best answers will eventually come from basic research on child development and family relationships, such as that previously mentioned. A more direct approach is being made, however, in studies which deal with the behavioral patterns of delinquents and potential delinquents and the socioeconomic environmental factors that may contribute to delinquency. Institute scientists are compiling significant data along this line in their work with a group of hyperaggressive boys. In addition, the NIMH is giving financial support to some 18 other projects in this field, including a pilot study of families of antisocial young children; a study of community, interpersonal, and personality factors in juvenile delinquency; an investigation of juvenile delinquency from the public health and clinical points of view; and a study of the factors which influence the use of

drugs by adolescents in New York City.

The National Institute of Mental Health is also concentrating heavily on mental retardation, another area of major concern to those interested in the welfare of children, and has joined with other governmental and public agencies in a concerted attack on this long-neglected problem of mental retardation. The National Association for Retarded Children and the American Association on Mental Deficiency have both been doing research for which the NIMH has given grant support. The former has just completed its project, set up to review current research into various causes of mental retardation, discover promising areas of new research, and to determine the ways in which the National Association for Retarded Children may promote greater activity in relation to mental retardation. The AAMD project, which is still under way, will assess the present situation in the United States and define needed research areas. Specialists working on the project will also formulate improved methods of care and propose ways of integrating the retarded population into our present social structure through such endeavors as improved home training programs, more adequate community and educational facilities, and more effective training methods and inservice education for professional workers.

The NIMH is also giving direct support to 17 extramural research projects in this area and is continuing basic research at the Institute into the causes of mental deficiency.

Scientists at NIMH, as well as grant-supported investigators, are continuing their research on phenylpyruvic oligophrenia, a disease which has been recognized as one cause of severe mental retardation. This ailment is caused by inability of the body to handle dietary protein. It has been found that the disease can be controlled by a synthetic diet and if the condition is detected early enough, its ravages can be prevented.

In another important Institute research project, scientists have devised a simple testing technic for distinguishing children whose retardation stems from brain injury from those in whom retardation is caused by other factors. This test holds promise for providing better services for mentally retarded children, based on more accurate diagnosis of their condition and potentiality for improvement.

Much of the Institute's research in this field is aimed at defining measurable degrees in mental retardation. We are finding more and more that children who have been considered as uneducable can be taught to care for themselves and, as they grow older, to perform simple tasks through which they can earn money and gain a sense of achievement. As a result of such research, many of these children who would otherwise be quite helpless and dependent grow to be quite self-sufficient and in some cases self-supporting.

A new project receiving NIMH support this year is designed to point up the differences between children who are mentally retarded and those who are suffering from childhood schizophrenia. There is a tendency to lump together under the label "mental retardation" various types of childhood disorders and there is need for more accurate differential diagnosis in order to deal with the diseases as separate entities. The investigators on this project will make a comparative study of retarded, normal, and schizophrenic children through observations of their behavior in a play setting.

There is a great and growing public concern for the mental health of children in our country. Parents, teachers, physicians, welfare workers, nurses —all concerned with children—are eager

for information on how to keep them mentally healthy. As definitive answers become available, they can be translated into services and programs for mothers and children. NIMH is working toward the discovery of more of these answers and toward the development of the professional personnel, the facilities, the services, and the methods and technics needed to apply the findings.

Dr. Felix is director, National Institute of Mental Health, National Institutes of Health, Public Health Service, U. S. Department of Health, Education and Welfare, Bethesda, Md.

This paper was presented before the Maternal and Child Health Section of the American Public Health Association at the Eighty-Fifth Annual Meeting in Cleveland, Ohio, November 12, 1957.

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## National Advisory Committee Meeting

The National Advisory Committee on Local Health Departments will hold its 10th Annual Meeting in Philadelphia on March 18. The subject, "New Patterns of Community Health Services: What Should They Be," will be discussed in small groups and be related to the business community, the existing health organizations in the community, including hospitals, the political economy, and the attitudes of the citizens themselves. Each discussion group will include health administrators and other personnel from both voluntary and official agencies, social scientists, public officials, business, labor, and farm representatives, and hospital administrators.

On the basis of an all morning meeting and a final late afternoon meeting the committee will try to chart its course for the coming year. At a dinner in conjunction with the National Health Forum, David E. Price, M.D., Dr.P.H., chief, Bureau of State Services, Public Health Service, will speak for the committee. The first session of the forum on the afternoon of March 18 will be open to those attending the NACLHD meeting.

George James, M.D., a deputy commissioner of health of New York City, is chairman of the committee planning this meeting. Clarissa E. Boyd, director of program development services, National Tuberculosis Association, is chairman of NACLHD.

*"Public health is people" is by now a well worn phrase. What it actually means in the strategy and tactics of public health practice is clearly stated in the following articles.*

# ATTITUDES AND REACTIONS OF THE PUBLIC TO HEALTH PROGRAMS

*Samuel M. Wishik, M.D., M.P.H., F.A.P.H.A.*

IT IS well recognized that health is not a product that can be given, but one that must be accepted and maintained. Consequently, all public health activities, even those of a direct service nature, must have a strong component of health education. The goals of our health education efforts can be placed at three levels. The first level, that of transmitting information, is by no means a simple task, since it is not easy to get people even to listen, let alone to hear. The second level of effective health education is the change in attitudes that may be engendered and the third is the change in practices. Once information is acquired, its application to one's own health protection and improvement requires personal effort and a certain degree of self-discipline. As has been often stated, new ideas and practices do not move into a vacuum, but must displace traditional and established attitudes and customs. The displacement is not a painless one to the individual concerned.

The two papers that follow are focused primarily at the second level. They attempt to observe the attitudes of people toward certain public health activities and to assess some of the factors that may have motivated them to accept or reject a recommended program.

When these papers were presented at the Annual Meeting of the American Public Health Association in Cleveland in November, 1957, they were discussed by two panels, one of social scientists and another of public health workers.* The discussion promptly left the specific subject of polio to consider the implications for public health activities in general. Some of the emphases that were made are summarized here.

A person's motivations are compounded out of his previous personal experience and the cultural background from which he derives and in which he moves. The public health worker finds it rather easy to understand cultural influences when they are exotic. When a group of public health workers in a midwestern state were questioned recently about cultural factors that might affect their daily work, one answer was to the effect that since their clients were all 100 per cent Americans of old stock, there were no cultural factors. Obviously, culture is here as well as in Bali, if only we can see it around us.

Professional persons more often than not are different in many ways from

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* Behavioral Sciences Panel—Stanley H. King, Ph.D., and Richard W. Wallen, Ph.D.

Public Health Panel—Betty W. Bond, Ph.D.; Anne Burns, R.N.; Viron L. Diefenbach, D.D.S.; George James, M.D.; and Marguerite J. Queneau.

their patients and clients. Allison Davis has pointed out so well, for example, the tremendous difference in social origin and class position between many school children and their teachers. The differences between the public health worker and his client introduce obstacles in communication between them. Recognizing this, the worker must strive for a number of compensations that may help to overcome the obstacles of class difference. Some specific efforts follow:

1. We should try to recognize that our standards are not necessarily identical with the optimum merely because they are ours. We should question as objectively as we can the bases for our points of view. To what extent, for example, are our recommendations and advice influenced by our own food preferences, attitudes toward smoking, and feelings about obesity?

2. We should not fall into the easy habit of regarding our own group as the most advanced. Otto Klineberg in his book, "Race Differences," semifacetiously points out that anthropological studies which presume to demonstrate a favored intellectual position for one or another group of mankind, by a strange coincidence, usually identify that group as that one from which the investigator doing the anthropological study himself derives.

3. Having become sensitive to the difference between our clients and ourselves we may place too high a premium on being liked by them. In our desire to be liked we may neutralize our effectiveness. The client, in turn, may try to please us by giving us information that will fit whatever we seem to be seeking. The leading question and the satisfying answer are examples of this.

It is not necessary, moreover, to be like the clients to be liked by them. The professional person does not have to use poor grammar because the client does. Nevertheless, the effective educator must begin where his clients are in information and attitudes and work from that point toward the desired goals. This is not the same as being where they are as people. The public health nurse does not have to wear stockings with runs in them when she makes a home visit in a slum area. Sloppiness on her part would depart from the role definition or picture of the professional person that is held by people in all classes of life. Instead, she retains the integrity as a professional worker and the dignity that are expected of her. Thereby, she gains the respect of the client, while her evident effort to understand his point of view obtains his cooperation.

4. Because of social differences, the professional worker must exercise great discipline in the use of language. For one, it should be at an understandable level appropriate to the educational achievement of the group one is trying to reach. What has received less emphasis than the importance of avoiding technical jargon is the tendency to use words with unnecessarily unfavorable connotations, such as "a shot" for a polio injection. The fact that the expression has become part of general usage by the public is no justification for our perpetuating it. To the child who hears it for the first time, the threatening implications are just as fresh and strong. And perhaps we might speak of a child's going to the hospital to have his tonsils "fixed" rather than "removed."

5. Since it is more economical and often more effective to reach groups rather than individuals, and since organized groups are easier to reach than collections of unorganized individuals, public health workers should try to exploit the people's own groupings and potential for grouping.

Of course, the public health educator should seek for natural leadership in a group to support his public health efforts among them. In somewhat a different

role than that of a leader, a member of the group can be established as a go-between or intermediary between the public health worker and the group. Continuing attention needs to be given, however, to the possibility that the intermediary will become so identified with the public health worker that he is no longer a representative member of his group.

The general extent to which people "cooperate" with public health programs is at times affected by their economic level, but more often seems to be related to the number of years they have attended school. A distinction should, of course, be made between years of educational achievement and native intelligence. The "noncooperative" members of society are not a degraded group with inherent deficiencies, but rather are graphic evidence of our own inability as public health workers to reach and to influence them. The social scientist helps the public health worker to identify such segments of the population for whom more concentrated efforts may be indicated.

In this and in other ways the social scientist is more and more being looked at as an important member of the public health team. Hopefully, the public health worker in turn is gaining a place and recognizing for himself a role as a member of the broader community-wide social science team.

Dr. Wishik is professor of maternal and child health, University of Pittsburgh Graduate School of Public Health, Pittsburgh, Pa.

These remarks were presented before a Joint Session of the American School Health Association, Dental Health, Food and Nutrition, Health Officers, Maternal and Child Health, Mental Health, Public Health Education, and Public Health Nursing Sections of the American Public Health Association at the Eighty-Fifth Annual Meeting in Cleveland, Ohio, November 11-15, 1957.

*What factors influence the way in which people react to a health program? Some answers are contained in this study by the National Foundation for Infantile Paralysis. The implications range far beyond polio vaccination and should be of interest to all health workers.*

## I. A STUDY OF THE PUBLIC'S ACCEPTANCE OF THE SALK VACCINE PROGRAM

*Melvin A. Glasser*

THE SALK vaccine was declared safe and effective on April 12, 1955, and the nation's vaccination program began on April 16 of that year. Eighteen months later, in the fall of 1956, more than half the people in the age groups most vulnerable to paralytic polio had not even begun to be vaccinated. By this time initial excitement over the announcement of the vaccine's effective-

ness had faded. Far behind, too, were early production difficulties and the so-called Cutter "incident." Although the vaccine had been in short supply, by the fall of 1956 there was a good supply. Stocks were beginning to pile up and manufacturers were considering production cutbacks.

Many felt that the record merited congratulations rather than concern. After all, some 43 million children and adults in the target group (all persons under 40 and pregnant women) had already received one or more of the required three injections. Never before had a new vaccine been so widely used in so short a time.

At the National Foundation for Infantile Paralysis and elsewhere, however, there was no elation at a job half done. The mission was to wipe out paralytic polio. Scientists were convinced that the threat of epidemic paralytic polio in the United States would not end until at least 85 per cent of the target group was fully vaccinated, and the ultimate goal had to be 100 per cent. Accordingly, while engaging in active promotion of vaccination, the National Foundation decided on a nation-wide survey to determine why many people were not being vaccinated.

The National Foundation had accumulated much experience in the conduct and use of such studies and had learned some lessons about them:

First: Revolutionary or completely unanticipated findings should not be expected. An experienced staff in daily contact with the problem should be and almost always is aware of the conclusions at which a study might arrive. But such studies give perspective and suggest emphases and areas of programming that may not have been given sufficient attention.

Second: The organization ordering the study must determine for itself the major questions it needs answered. Only when this is fully and carefully done can research groups proceed intelligently.

Third: Key staff must be involved in the development of study plans and particularly in the translation of study findings into program activities.

Fourth: In selecting a research group to conduct the study these factors, among others, must be considered:

Does it have the organization to complete the study in time?

Does it know the field involved well enough to understand quickly the nature of the problem?

Has it demonstrated that it can bring to bear on its studies the insights of social, psychologic, and economic factors?

Guided by these considerations, arrangements were made with two research groups with which the National Foundation had previously had favorable experience. The American Institute of Public Opinion (Dr. George Gallup's organization) conducted the actual study; the Bureau of Applied Social Research at Columbia University assisted in the study design, in the analysis of the data, and in developing the conclusions.*

The purposes of the study were:

1. To determine the nature of public resistance to vaccination.
2. To learn how this problem differed from the general problem of the acceptance of any new vaccine.
3. To discover the key people or contacts who help or stimulate families to go ahead with vaccination.
4. To learn to what extent the public education program of the National Foundation should be aimed at individual vaccination and to what extent at stimulating family vaccination.
5. To determine what part lack of funds plays in holding up vaccination.
6. To note any regional variations in the

* Emery Ruby, editor of the Gallup Poll, and Dr. David Sills, acting director, Bureau of Applied Social Research, Columbia University, assumed major responsibility of directing the participation of their organizations in this study.

acceptance of the vaccine and reasons given for acceptance or resistance.

Personal interviews were conducted between January 14 and January 28, 1957, by field interviewers who identified themselves as representing the American Institute of Public Opinion which was carrying on a health study. A total of 3,509 interviews were conducted on a nation-wide basis. Each interview lasted approximately 45 minutes. These interviews were obtained from a sample of adults under 40 years of age, a sample of mothers of teen-age children, and a sample of mothers of children of all ages under 21. The total sample was selected to be adequate statistically and to give accurate results within a small margin of error.

## Findings

The study revealed that there was broad public knowledge about the vaccine. By and large, however, people were failing to take advantage of the vaccine for themselves and their children, not because of specific resistance to it, but rather because of lack of definite, positive influences which might direct them to a clinic or doctor's office for inoculations.

The following were among the more significant specific findings and conclusions:

1. A significant number of persons in the target group were unprotected:

Only one in eight adults in the 21–40 age group had started vaccination.

Two out of five teen-agers had one or more inoculations.

Nearly three out of every five children under seven had one or more polio shots.

Among children seven to 12 years, three out of every four had one or more polio shots. This high percentage reflected the National Foundation's free school vaccination program for this group.

2. The only major regional variations in the acceptance of the vaccine were a somewhat lower rate in the South (probably related to low economic and educational status) and a somewhat lower acceptance rate among teen-agers in the Mountain and Pacific states. This was believed to be related to the aftermath of the fears generated by the Cutter "incident," which centered in the Far West.

3. Failure of adults in the target group to make use of the vaccine was traced largely to two factors: "Plain procrastination," and the feeling that they were not susceptible to the disease. Related to this was the belief that victory over polio had been achieved. As a consequence there was considerable lethargy about obtaining vaccine protection except under the stimulus of an epidemic in the community or acquaintance with someone contracting the disease.

4. There were two indications that although there was widespread general knowledge about the vaccine, there were gaps in specific knowledge and that these contributed to nonvaccination:

Many parents of teen-agers expressed the belief that teen-agers were not as susceptible to the disease as younger children. This, together with "procrastination," was described as the major factor in the relatively low acceptance rate of the teen-age group.

Confusion existed, particularly among young adults, and to a lesser extent among parents of teen-agers, as to the availability of vaccine. While there was actually a plentiful supply, many persons were not yet aware of this.

As a means of making the vaccinations readily and easily available, and to demonstrate its availability, the recommendation was made that the National Foundation encourage the widespread use of public clinics for polio immunizations.

5. As in most other public health matters the data presented revealed a relationship between educational level, annual income, and the probability of vaccination having taken place. Persons with more education and higher incomes were apt to know more about the vaccine and the threat of polio and,

accordingly, were more likely to have been immunized.

6. Doubts about the safety and efficacy of the Salk vaccine appeared to have been largely dispelled. Nine out of every 10 adults in the target groups expressed confidence in the vaccine as a good means of preventing paralytic polio. Greatest doubt as to safety was expressed in the Mountain and Pacific states—again a reflection of the Cutter "incident."

7. The question whether lack of funds was holding up polio inoculations was of major concern to the National Foundation. The findings, regrettably, were not conclusive. One analysis of the data concluded that lack of funds was a deterrent and cited as evidence the fact that nearly three out of every 10 adults in the target group said "cost would be a reason" why many of their friends and acquaintances had not had polio shots. Furthermore, one out of every five young adults in the $7,000 and over income group had had one or more shots, but only one in 16 of those in the under $3,000 income group had started their inoculations.

However, another analysis of the same data concluded that the cost of vaccination was not a major deterrent. Only 28 per cent of the total sample mentioned this as a reason and it was mentioned most frequently by persons who actually had been vaccinated. Furthermore, the largest differences between percentages were found among adults in the low socioeconomic group. While 40 per cent of the vaccinated persons in the low socioeconomic group asserted that cost is a reason, only 27 per cent of the nonvaccinated adults in this group gave this reason.

Actual experience in the period since the study would indicate that lack of funds, while playing a role, has not been a major deterrent to vaccination.

8. The physician is of key importance in any program to achieve universal polio immunization. This was evident in a special analysis made of the unvaccinated group. An overwhelming majority of adults in the target group who had not yet had polio shots said they would be vaccinated if their doctor recommended it. And 80–90 per cent of this group reported they had a regular doctor. However, the nonvaccinated adults were found to be less likely to visit their doctors regularly. Only half had visited a doctor during the six months prior to the interview, in contrast to nearly three-fourths of the vaccinated group.

The pediatrician was suggested as a physician who was particularly influential in vaccination of the target group. Twenty-seven per cent of the children in the study were under the care of pediatricians. Except for the low socioeconomic group, nonvaccinated children were as likely as others to be seen by pediatricians.

9. When presented with a list of eight possible sources from which they could obtain information on polio injections, more than nine out of 10 adults in the target group rated the following as the top three they would depend on most for reliable information: (a) my doctor (59 per cent), (b) local NFIP chapter (22 per cent), (c) city, county health officers (16 per cent).

10. Finally, an over-all analysis of the data indicated that large numbers had not yet started their inoculation because of social rather than psychologic or economic factors. The vaccine was widely known and generally considered to be good. Doubts about its safety and efficacy were slight. Cost considerations were not of major importance. Those unvaccinated, however, were more likely to be of low socioeconomic status (annual income of less than $5,000 and less than high school graduation); they were less likely to

Table 1

| | Vaccinated People | | | Nonvaccinated People | | |
|---|---|---|---|---|---|---|
| | Socioeconomic Status | | | | | |
| | High | Middle | Low | High | Middle | Low |
| Per cent of mothers of children under 13 who stated most of their friends' children had been vaccinated | 93 | 89 | 83 | 69 | 56 | 41 |
| Per cent of mothers of children 13–20 who stated most of their friends' children had been vaccinated | 89 | 82 | 84 | 69 | 62 | 45 |
| Per cent of adults under 40 who know another adult who has been vaccinated | 90 | 87 | 77 | 38 | 35 | 20 |
| Per cent of adults under 40 who state that many of their friends and acquaintances have been vaccinated | 36 | 35 | 23 | 9 | 8 | 5 |

belong to voluntary associations: they were less likely to be able to answer questions of fact about polio and the vaccine.

The social origins of nonvaccination are most strikingly revealed in the Table 1 comparing the role of social relationships in vaccination and nonvaccination.

This table is evidence that people tend to behave in this aspect of their lives as in others, the way their friends do—providing they know what their friends have done. The social activity of talking about vaccination is thus a major determinant of vaccination itself. From this it appears likely that:

Those already vaccinated are the most effective protagonists for further vaccinations.

The problem of the unvaccinated was primarily, though not entirely, with lower socioeconomic groups.

Informal communication—getting people to talk about vaccine—would appear to be the most direct method of accelerating the vaccination program.

The data and findings of this survey were studied by the National Foundation staff. A series of steps were taken in order to translate the study recommendations into specific action programs. Many of these activities appear to be achieving the desired results. It would, of course, be unfair and inaccurate to attribute the present improved situation solely to this study and its follow-up. Numerous other factors have been significant. Nonetheless, as of November 1, 1957, just about one year after our concern over polio vaccination lethargy led us to plan a study, some 64 million Americans, 21 million more than a year ago, had already had one or more polio injections.

But lest this trend convey a feeling of smugness and encourage a renewed state of lethargy which would require another study, we must add that there are still 45 million Americans in the

under 40-year group who have yet to start their polio immunization and 30 million who require one or more injections to complete their vaccination. Until this entire group is reached, none of us can rest.

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This paper was presented before a Joint Session of the American School Health Association and the Dental Health, Food and Nutrition, Health Officers, Maternal and Child Health, Mental Health, Public Health Education, and Public Health Nursing Sections of the American Public Health Association at the Eighty-Fifth Annual Meeting in Cleveland, Ohio, November 14, 1957.

*This California study gives further evidence that an individual's attitude toward health is related to his socioeconomic status and to his perception of the peer group. Furthermore, attention is drawn to the effect of the quality of community programs on public attitudes and action.*

## II. ATTITUDES OF CALIFORNIANS TOWARD POLIOMYELITIS VACCINATION

*Malcolm H. Merrill, M.D., M.P.H., F.A.P.H.A.; Arthur C. Hollister, M.D., M.P.H., F.A.P.H.A.; Stephen F. Gibbens; Ann W. Haynes, M.P.H., F.A.P.H.A.; with the assistance of Vita H. Leslau.*

IN THE summer of 1956, the California State Department of Public Health, with the help of the U. S. Bureau of the Census, conducted a survey of California households to collect information concerning the status of poliomyelitis vaccination and about attitudes toward polio. Included were two other content areas of interest to our department. These concerned the opinions and attitudes of the public toward air pollution and toward child health practices.

The household interview technic seemed to be a suitable tool for such a study. Our department had accumulated substantial experience with the survey technic, having just completed the California Health Survey of 1954–1955, a state-wide study of general morbidity.[1] The subject of polio was particularly germane because of the introduction of the Salk vaccine and the occurrence of the "Cutter incident."

Two factors in the California poliomyelitis situation were unique.

First: Since 1940, case rates in California have usually exceeded the national average and public attention has been directed to the problem by newspapers, radio and TV, probably more forcefully than in many other areas of the country.

Second: Almost half the persons who contracted polio following administration of the Cutter vaccine were residents of California. Consequently, the Cutter

incident probably had a greater impact in California than in the United States as a whole.

Aside from these two points, the polio vaccination situation in California was similar to that in the rest of the country. When our survey began, the vaccine had been available to children aged five to nine years for about one year, and to all children under 15 years for seven months. In most areas of the state, vaccination was available both from physicians in private practice and from school and health department clinics. Emphasis in public information had been put on the importance of the immediate vaccination of the five to nine age group with subsequent vaccination of others as soon as vaccine became available.

## Method and Scope of the Survey

The sample, selected by the Bureau of the Census, was representative of the civilian, noninstitutional population of California, and it comprised 3,628 households, or about one out of every 1,200 households in the state. Specially trained Census Bureau enumerators interviewed the mother, or mother substitute, as well as a randomly selected adult member of each household between mid-May and mid-July of 1956. The sample included 1,719 mothers or mother substitutes and 3,544 randomly selected adults. The design and selection of the sample, and the conduct of the interviews, were in accordance with specifications established by the California State Department of Public Health. The data were collected in the name of the department.

The mother respondent furnished information about the immunization status of her children for polio, smallpox, diphtheria, pertussis and tetanus, the tonsillectomy history of all household members, and was questioned about her attitude toward polio vaccination. The randomly selected adult respondent gave information on his or her attitude toward poliomyelitis, polio vaccination, and smallpox vaccination.

This report is limited to an analysis of attitudes and opinions toward polio vaccination. The information to be discussed emerged from person-to-person interviews conducted by trained Census Bureau interviewers using a standardized questionnaire. Attitude data were collected primarily by open-ended questions with built-in probes. The survey was not designed to probe deeply for underlying factors in motivation, but rather to provide a measure of public sentiment and action throughout the state for use at one stage in the polio vaccination program.

## Favorability Index

A measure of general attitude to polio vaccination was desired in order to facilitate analysis of the subpopulation opposed to vaccination.

From the answers to questions asked of the mother respondent on the safety and effectiveness of the polio vaccine, from the reasons she gave for the vaccination or nonvaccination of her children, and from other responses, assessment was made of the attitude of each mother toward polio inoculation. These attitudes were categorized as either favorable, unfavorable, or neutral. (Vaccination status per se was not considered in determining whether a mother was favorable or not.)

On the basis of this index: 81 per cent of the mothers questioned were categorized as favorable to polio vaccination, 11 per cent as unfavorable and the remaining 8 per cent as neutral. The unfavorable mothers constituted one problem population. The second problem group comprised mothers whose attitudes were favorable, but who did

not have their children vaccinated. Four out of every ten favorable mothers were in this group.

## Characteristics of Problem Groups of Mothers

How did the characteristics of mothers unfavorable to polio vaccination differ from those of favorable mothers? How were they similar?

### 1. Socioeconomic Variation, Education, and Family Size

Low socioeconomic status was one of the most important factors identifying the unfavorable mothers. On the whole, their families had a low income and were large. The head of the household was more likely to work in a "blue collar" * occupation and the educational level of the mothers was lower than for the favorable group.

### 2. Action of Friends

A characteristic of all mothers interviewed is that they tended to act in accordance with their perception of the way members of their peer groups acted. More than half of the unfavorable mothers believed that most of their friends had not had their children vaccinated. Conversely, the majority of favorable mothers believed that most of their friends' children had been vaccinated.

### 3. Cutter Incident

One thought-provoking result to emerge from the survey was that those mothers who explicitly mentioned the Cutter incident during the course of the interview tended to be more favorable than those who only referred to it indirectly and those who made no reference to it at all. Mothers who mentioned the Cutter incident may have been the best informed or the most interested group. We know that they listed more sources from which they had received information on polio vaccine than mothers who either referred to the incident indirectly or made no reference to it. A possible conclusion drawn from this is that persons who had more opportunity to become aware of the Cutter incident, in all likelihood also were better informed of the efforts made to set high safety standards for vaccine production, of the success of these efforts and of the strong scientific conviction of the safety of the vaccine.

### 4. Variation with State Geographic Area

Geographic area within the state was another variable related to attitude. At the time of the study San Diego County in Southern California was the most highly vaccinated area and also had the largest percentage of favorable mothers. The San Francisco Bay area in Northern California had the lowest vaccination levels, and the smallest proportion of favorable mothers.

### 5. Experience with Other Immunization Procedures

Families who had not had their children immunized against other communicable diseases tended not to have them vaccinated against polio. This of course is not surprising. It is understandable that a mother's reaction to any new immunization procedure will relate to her previous attitudes, actions, and experiences.

## Attitudes and Vaccination Status of Children

The vaccination status of children one through 14 years of age was strongly correlated with the attitudes of their mothers. Only 3 per cent of children of unfavorable mothers had been

* Classified as blue collar workers were craftsmen and foremen, operatives, private household and service workers, farm laborers and foremen, and laborers.

vaccinated as compared with 54 per cent of children of favorable mothers.

When a child had not been vaccinated, the mother was asked, "Why hasn't . . . had the shots up to now?" The answers are summarized in Table 1 and discussed below.

### 1. Unfavorable Mothers

In the case of two-thirds of the unvaccinated children of unfavorable mothers, the answer was fear of the vaccine. Fear, plus opposition to all shots and the opposition of another person, were the reasons stated for the nonvaccination of 92 per cent of children of unfavorable mothers.

### 2. Favorable Mothers

While the action of almost all unfavorable mothers was consistent with their expressed attitude, favorable mothers were less consistent. Forty-six per cent of their children had not been vaccinated. The distribution of reasons given by this group for not having their children immunized was different from those given by unfavorable mothers and the reasons were more diverse.

The most popular response of favorable mothers, given by one-quarter of them, was "I just neglected it"—"I never got around to it." Fear of the vaccine was the next most common reason given. Although these mothers were generally

**Table 1—Per cent Distribution of Nonvaccinated Children* by Mother's Stated Reason for Nonvaccination and Assessment of Mother's Attitude Toward Polio Vaccination**

| Stated Reason | Per cent of Children | | | | |
|---|---|---|---|---|---|
| | All Nonvaccinated Children | Assessment of Mother's Attitude Toward Vaccination | | | |
| | | Favorable | Neutral | Unfavorable | Undetermined |
| Total, All Reasons | 100 | 100 | 100 | 100 | 100 |
| Fear, uncertainty of vaccine | 31 | 15 | 64 | 68 | 1 |
| Opposition of husband or doctor to polio shots | 7 | 7 | 2 | 10 | ... |
| General opposition to all shots | 6 | 3 | 4 | 14 | 11 |
| Wrong age group for polio shots | 7 | 9 | 8 | 1 | 11 |
| Child not in public priority program | 9 | 13 | 2 | ... | ... |
| Too expensive | 7 | 9 | 5 | 1 | ... |
| Vaccine not available | 5 | 7 | ... | 2 | ... |
| No motivation—"Didn't get around to it" | 18 | 24 | 10 | 2 | 31 |
| Child was sick or other medical reasons | 4 | 6 | 2 | 1 | ... |
| Child presently scheduled for shots | 3 | 4 | ... | ... | ... |
| Other | 2 | 2 | 2 | 2 | 43 |
| Total Number of Nonvaccinated Children | 1,734 | 1,148 | 172 | 379 | 35 |

* Since mothers may have given a different reason for not having each of their several children vaccinated, this table was necessarily based on children. There were 1,734 children aged 1-14 years in the sample who had not been vaccinated. These are the reasons given for each child by his mother.

NOTE: Per cents given as calculated, not adjusted to add to 100.

favorable, some of them still had doubts because of the newness of the vaccine or because they felt its safety or effectiveness was questionable.

However, the mothers of more than half of these children gave reasons other than "I just didn't get around to it" or fear. Some mothers thought their children were in the wrong age group. Others thought the vaccine was too expensive. Some of them said their child was sick or the vaccine was not available in their area.

In general, the favorable mothers gave a wide variety of reasons for not having their children vaccinated, while the unfavorable mothers were primarily deterred by fear.

This picture is somewhat oversimplified since it gives only the mother's stated reason for not having her children vaccinated, which may be only a rationalization masking real feelings. This is an example of the difficulty in determining motivation from a survey of this type, with its attendant interviewing and coding problems.

## Attitudes of Randomly Selected Adults

In addition to securing information from mothers related to the vaccination of their children, we were interested in obtaining some indication of how adults would react upon becoming eligible to participate in the program.

A randomly selected sample of adults, drawn from the same households and including some of the mother respondents, was interviewed. Eighty-six per cent expressed a favorable attitude to polio vaccination, a finding slightly higher than that secured from mothers. As in the case of the mother respondents, a favorable attitude was closely related to social and economic factors. As annual income, occupational level, and especially as education increased, there was a correspondingly greater percentage of favorable respondents.

The question was asked: "If there are enough polio shots for everybody, do you think adults should be vaccinated, or do you think it doesn't matter very much?" Eight out of every ten adults under 40 years of age thought they should be vaccinated. Adults from the lower income and occupational groups were as emphatic about the desirability of adult vaccination as were those from the higher socioeconomic levels. The significance of this result must be interpreted with caution since the form of the question may have predisposed the respondent to answer favorably.

The interviewers asked, "When adults get polio, do you think they get a milder or more severe case than children do when they get it?" More than half of the adults in the sample were not aware that polio in adults is more severe.*

The question required an informed answer. One might have predicted that educated persons would be more likely to have had correct information than those with less education. We did not find this to be the case. In fact, the college graduates among the respondents had the smallest percentage answering correctly.

There were consistent differences in attitude between adults under 40 years of age and adults over 40. The older population tended to have greater percentages answering "no opinion." More of them felt that it did not matter whether adults were vaccinated against polio or not. The younger adults tended to be more aware of the severity of polio in adults. They were more positive in their belief in the safety of the vaccine, and were generally more favorable to polio vaccination.

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* In 1954 a greater proportion of California adults with poliomyelitis suffered paralysis than did children; a greater proportion of adults with paralysis had bulbar polio than did children; and 57 per cent of all the deaths from polio occurred among adults, notwithstanding the fact that 64 per cent of the total polio cases occurred among 0-19-year-olds.

The respondents tended to be consistent in their answers. For example, when asked if they would get vaccinated if their doctor were to recommend it, those that responded "no" tended to feel that adults get polio less frequently and that the vaccine was not safe.

It is perhaps an illuminating sidelight that the lack of information of California adults concerning the nature and prevalence of polio and the value of immunization is not confined to one disease. For example, when asked whether or not it was important for adults, who had been vaccinated against smallpox as children to be vaccinated again, almost one-half responded "no." Their explanation ranged from statements that all adults are immune to smallpox to "a shot as a child is sufficient."

### Interpretation of Findings

1. Early program priorities limiting vaccination to children aged five to nine caused some misunderstanding among mothers. Many did not realize that eligibility had been restricted because of the shortage of the vaccine and not because vaccination was unimportant for younger or older children.

Here are a few of the reasons mothers gave for not having their children vaccinated:

"There hasn't been any urging his age group. We're not concerned."

The mother of a three-year-old said. "I didn't know they started that young. It's only for school age, isn't it?"

Or, "The school hasn't demanded kids that old get them"—This response from the mother of a 12-year-old.

Their children were in the age group 0–14 and at the time of the survey had been eligible for vaccination for seven months, yet these mothers, and many others, did not know priorities had been expanded.

Some felt immunization was not important for preschoolers. One mother said, "Being as she's not going to school I don't think there's the danger as with my other child."

2. The differences between first, intermediate, and ultimate program goals presented a difficult problem in health education. At any given time, emphasis necessarily was on the priority age group. Although we tried to keep ultimate goals before the people, the survey findings indicate that we were not successful. Seven months after priorities had been extended, many mothers did not know that children under five and over nine years of age were eligible and only a small proportion of adults were prepared for what was to be a next step in our program—the inclusion of all persons under 40.

3. There is evidence that pubic attitudes were favorably influenced by an aggressive, consistent program cooperatively planned and carried out by a local health department, medical society, and other community agencies.

San Diego County started its program on the first day vaccine became available. It was harder hit by the Cutter incident than any other California community. Throughout the period that vaccine was withdrawn, local public health and medical authorities presented to the public a consistent, reassuring story of support of the Salk vaccine and of local, state, and federal program policies. The local program was resumed as soon as vaccine again became available. In our survey the people of San Diego County were found to be more favorable to the vaccine than in any other geographic area of the state. A smaller percentage of mothers gave a fear response and a larger proportion of their children had been vaccinated.

On the other hand, in another area where some local programs started slowly without basic agreements having been sought between health departments, medical societies, and local agencies, and where public statements critical of

the program and the vaccine were made, we found a high proportion of respondents who doubted the safety and effectiveness of the vaccine. This area had the lowest percentage of vaccinated children.

4. It would appear that the lack of public understanding of the effect of poliomyelitis upon adults is a reflection both of the early vaccination program emphasis on children and of the words and symbols which have characterized this disease for many years. The words, "infantile paralysis," and the picture of a child on crutches help to create and reinforce the concept of a disease that affects children but not adults.

5. One of our most significant findings was that people, of whatever group, tend to think and act according to their perception of the way their friends think and act. The influence of the peer group is a factor too frequently overlooked in planning health education programs.

6. The correlation of unfavorable attitudes with low socioeconomic status and low educational level has been observed in other studies.[2,3] Data available in any public health department, if analyzed, would reveal that people who have little money and little formal education tend to have more than their share of disease, lag behind others in adopting new public health measures and in availing themselves of community health services. It appears that there is a need for a change in target and methods if we are to reach this group effectively with health education. Possibly some action research is indicated.

7. One of the most valuable aspects of this survey was that it was conducted midway in the program. The results, only a few of which have been reported here, were utilized by the state and local health departments in program planning and in improving administrative practices and health education activities.

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## Training In Veterinary Mycology

A course in "Laboratory Diagnostic Methods in Veterinary Mycology" is announced by the Communicable Disease Center for February 24–28, 1958. The course is designed to familiarize practicing veterinarians, laboratory workers, and others concerned with procedures for detecting, isolating, and identifying the fungi which cause mycotic infections in animals.

Additional information and application forms from Laboratory Training Services, Communicable Disease Center, P. O. Box 185, Chamblee, Ga.

*In 1958 the Armed Forces contemplate the initiation of a program for vaccinating new recruits against acute upper respiratory illnesses caused by adenoviruses. The effectiveness of this vaccine and the indications for its use are discussed in this article.*

# EFFICACY OF AND INDICATIONS FOR USE OF ADENOVIRUS VACCINE

*Maurice R. Hilleman, Ph.D.*

THE ACUTE respiratory illnesses of man caused by viruses constitute one of the last great frontiers in infectious disease. It is not surprising, therefore, that much research effort has been expended in recent years to the cultivation of the causal agents in the laboratory and to the evaluation of their importance as disease-producing entities. The discovery in 1953 of the adenoviruses [1-3] represents the most significant advance in our knowledge of etiology of acute respiratory illnesses in man since the discovery of human influenza virus in 1933. The adenovirus discovery was a sequel to the renaissance of tissue culture for virus propagation which has since resulted in the recovery of additional new agents.

Shortly after the initial recovery of the adenoviruses, it was shown that these viruses are a family of distinct immunologic types as determined by the neutralization technic [4-8] and that they share a common group-specific "soluble" complement-fixing antigen.[1, 4, 5, 9, 10] It was also found that these viruses are a principal cause of acute respiratory illnesses among newly recruited military personnel.[7, 11-15] The respiratory illnesses caused by adenoviruses fall into the general category of the febrile catarrhs [16, 17] and into the specific syndromes of undifferentiated acute respiratory disease (ARD), nonstreptococcal exudative pharyngitis, atypical pneumonia unassociated with cold agglutinins, and pharyngoconjunctival fever.[17-22] In extensive studies carried out at military camps it has been found [14, 23] that the adenoviruses may cause hospitalization of roughly 10 per cent of the entire basic trainee component of a training post during the year. During the winter months up to 90 per cent of all hospital admissions for acute respiratory illness in military recruit camps may be adenovirus cases.[11-13, 15, 23] This causes great loss in military manpower, large costs for medical care, and serious disruption of the troop training program.[23, 24]

## Vaccine Development and Evaluation

The adaptation of adenoviruses to growth in tissue cultures of monkey kidney made possible the production of a vaccine. Two adenovirus vaccines have been developed and tested to date. The vaccine [25-27] developed in our laboratories at the Walter Reed Army Institute of Research is a bivalent material and contains Types 4 and 7 adenovirus, the two types which account for the vast majority of cases in military re-

cruits. The vaccine[28, 29] developed by Huebner, et al., at the National Institutes of Health is a trivalent preparation which contains Type 3 adenovirus as well as Types 4 and 7. Studies to date have indicated such low incidence of Type 3 adenovirus in military populations as to obviate at present any real need for this component in the vaccine[5, 7, 15, 23-25, 30] for military use. Additionally, the bivalent 4 and 7 vaccine induces levels of antibody against heterologous Type 3 virus roughly comparable to the homologous agents.[26] For both the bivalent and trivalent vaccines the virus is cultivated in monkey kidney cells in tissue cultures maintained with serum-free synthetic mixture 199. The virus in the vaccine is inactivated with formalin and exhaustive tests for safety are performed.

Extensive field trials of both the bivalent and trivalent vaccines carried out in military populations prove beyond all doubt the high degree of efficacy of adenovirus vaccine in preventing illness caused by Type 4 or Type 7 adenovirus. The results of the trials to date are summarized in Table 1. It is seen that in cases of febrile respiratory disease, due to all causes, both vaccines effected an over-all reduction from 55 to 81 per cent. While these results are striking in themselves, the real test for efficacy of the vaccine is in its effect on the adenovirus cases, specifically, in the epidemic cases, separate from illnesses of other etiology. The bivalent vaccine effected a reduction of 90–98 per cent in adenovirus cases. The early preliminary data kindly furnished by Dr. Harry Rose[31] covering the 1957 study at Fort Dix indicate that the effectiveness of the trivalent vaccine in preventing adenovirus-caused respiratory disease was roughly of the same order of magnitude, i.e., 83 per cent, as the bivalent product.

It is clearly evident from these studies that a vaccine has been developed which shows promise for essential eradication of adenovirus-caused respiratory disease as an important medical problem in the Armed Forces. It is contemplated that general use of the vaccine for immunization of new recruits will be im-

**Table 1—Results of Field Evaluations of Adenovirus Vaccines**

| Vaccine | Epidemic | Volunteer Group | Respiratory Disease—All Causes | | Respiratory Disease Caused by Adenovirus Only | |
|---|---|---|---|---|---|---|
| | | | Vaccine Protection Ratio | Reduction in Cases | Vaccine Protection Ratio | Reduction in Cases |
| Bivalent 4 and 7 | Fort Dix, N. J., 1956, Types 4 and 7 (Refs. 25–27) | 624 | 1:5.2 | 81% | 1:61 | 98% |
| Bivalent 4 and 7 | Fort Leonard Wood, Mo., 1957, Type 4 (Ref. 30) | 8,238 | 1:2.2 | 55% | 1:10.4* | 90% |
| Trivalent 3, 4, and 7 | Great Lakes, Ill., 1956,† Type 4 (Ref. 29) | 5,260 | 1:2.3 | 57% | Not reported | |
| Trivalent 3, 4, and 7 | Fort Dix, N. J., 1957,‡ Type 4 (Ref. 31) | 14,000 (Approx.) | 1:4 (Approx.) | 75% (Approx.) | 1:6 (Approx.) | 83% (Approx.) |

* Calculations of adenovirus-specific rates based on tests of approximately 50 per cent of the cases.
† Calculated from data presented relating to febrile respiratory illness only, all causes.
‡ Data incomplete. Only approximate values are given. Data supplied by Dr. Harry Rose.

plemented in the Armed Forces sometime during the latter part of 1958. Regulations governing commercial manufacture of the vaccine have been published in the Federal Register [32] and the product has been licensed officially by the Department of Health, Education, and Welfare.

## Antibody Response to Vaccination

Laboratory investigations of adenovirus vaccines have indicated that most lots of vaccine were of borderline potency as indicated by tests for induction of measurable neutralizing antibody in guinea pigs given a single intramuscular dose of vaccine.[25, 26] Such information did not in any way determine the permissible latitude in potency of the vaccine where the human being, commonly having had prior experience with the adenoviruses, is concerned. It was considered important, therefore, to measure the neutralizing antibody response in man to graded doses of the vaccine to determine whether for human use there was any "leeway" in the potency of the material tested. The vaccine employed for study in our laboratory was the same commercially prepared bivalent vaccine (Lederle) listed in Table 1 and used in the Fort Leonard Wood field trial of 1957.

Figure 1 shows that the percentage of vaccinated persons with neutralizing antibody increase against homologous Types 4 and 7 adenovirus was greatest when vaccine diluted 1:2 was employed. This response, with minor variation, was progressively reduced with further dilution of the vaccine. It is of interest that the response to undiluted vaccine was slightly less than to the material diluted 1:2, and that an antibody titer rise was evoked in a few persons who received vaccine diluted as much as 1:729. The response to Heterotype 3 virus was erratic and less directly related to the vaccine dose. These find-

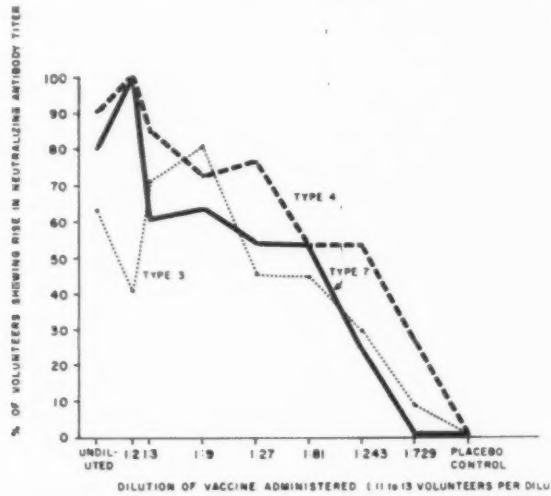


**Figure 1—Percentage of Volunteers Showing Increase in Neutralizing Antibody Against Types 4, 7, and 3 Adenovirus Two Weeks Following Intramuscular Inoculation of 1 ml of Bivalent Types 4 and 7 Vaccine, According to Dilution of Vaccine Administered.**

ings, not shown in the table, were generally reflected in the mean postvaccination antibody titers against the corresponding types and, especially, in the rate of conversion of the neutralizing antibody status of individuals from the less than detectable to a detectable level. Vaccine diluted more than 1:2 failed consistently to convert all of the initially seronegative Type 4 persons to the positive status and similar failure to convert seronegative Type 7 persons was found when the vaccine was diluted 1:81 or greater. The findings for Type 4 virus point up, especially, the importance of obtaining vaccines of maximal potency and of minimizing loss of virus from the vaccine attendant upon fine filtration of the virus in the production process.

In further investigations by our laboratory of the bivalent vaccine (to be recorded in detail elsewhere), it was shown that the antibody response to the Type 7a virus recently described by Rowe, et al.,[33] was indistinguishable from that induced against Type 7 virus, indicating effectiveness of the vaccine against the former agent. However, the vaccine induced essentially no antibody against Type 14 adenovirus, an agent reported [33, 34] to be of importance in epidemic acute respiratory illnesses among recruits in the Netherlands Armed Forces, but which appears to be absent from recruits in the continental United States. It was shown, further, that the antibody response to Heterotype 3 adenovirus resulted from the Type 7 component in the vaccine and could not be attributed to Type 4.

Experiments to compare the effectiveness of various methods of vaccine administration showed that the mean antibody response to vaccine in persons given 1 ml by jet gun [35] was essentially identical with that obtained with the same dose of vaccine given intramuscularly. It was of special interest that the mean antibody response to vaccine administered in 0.1 ml amount by the intracutaneous route approximated the response to the full 1 ml intramuscular dose. However, the effectiveness of the dermal route of inoculation in actually preventing disease has not been measured to date and the method cannot be recommended for routine use at this time. In studies to measure the duration of antibody after vaccination it was shown that the mean antibody level declines to about one-half the initial maximal level 10 months postvaccination. The administration of a further dose of vaccine at the 10-month period elevates the mean antibody level only slightly above that achieved initially.

## Indications for Use of Vaccine

The great importance of adenovirus-caused respiratory illness to the Armed Forces in effecting serious manpower and economic losses has been the subject of numerous published reports referred to above and will not be reviewed here. There is urgent need for adenovirus vaccine for new recruits and, as stated above, routine administration to such personnel is contemplated to begin in 1958. The attack rate for adenovirus disease among the "seasoned" cadre personnel is very low,[11, 13, 14] compared to recruits, and the vaccine is not needed for such persons.

In striking contrast to their behavior in military recruit populations, the adenoviruses presently appear to be responsible for only a fraction of the respiratory illnesses among adult civilians. The available data have been reviewed at length by Hilleman [36] and by Jordan [37] and are not repeated here. Studies of various segments of the civilian population including families, college students, university students, university employees, and selected cases of acute respiratory illness from hospitals or private practice have shown very low attack rates for respiratory illness caused by adenovirus. It cannot be

stated that the findings in these limited segments of the population are necessarily illustrative of the entire spectrum of the population. However, until such time as definitive evidence is obtained of need for vaccine in a particular civilian population group, general use of the vaccine is not warranted.

The potential need for adenovirus vaccine among children seems somewhat greater than in adult civilians, but the question cannot be answered definitively at present because of the lack of information concerning attack rates for illness caused by these agents. The few recorded outbreaks of Type 3 adenovirus infections among children in camps are insufficient, in the absence of other evidence, to warrant general use of the vaccine among such persons. The adenovirus disease situation as it affects very young children or infants is virtually unknown at present, and it is in this area that much research needs to be carried out. Thus, whether an adenovirus vaccine is needed for children, what types of adenovirus should be included in the vaccine, and just how effective such vaccine would be in preventing disease are all important research problems for the future. Finally, in any consideration of the employment of adenovirus vaccine, it is important to remember that there is no evidence to relate adenovirus infection to the common cold. Indeed, the bivalent adenovirus vaccine has proved quite ineffective in preventing the mild febrile or nonfebrile acute respiratory illnesses which fall into the general clinical category of the common cold and which are caused by agents other than the adenoviruses.

## Summary

The past three years have seen the development of killed adenovirus vaccines which are safe and which are highly effective in preventing epidemic acute respiratory illnesses among newly recruited military personnel. Use of the vaccine in new recruits in the Armed Forces, contemplated to begin in 1958, is expected to effect great savings by preventing loss of manpower, by reducing the need for medical care, and by preventing the disruption of the troop training program which results from the occurrence of the disease. Studies of antibody response to the vaccine in man indicate the need to produce vaccine of high potency to obtain maximal effect. The great need for the vaccine in new recruits has not been reflected to date in the civilian population in which attack rates for the disease appear to be very low. Determination of the possible need for vaccine in certain segments of the adult civilian population or in children and infants are important areas of research for the future. Routine use of the vaccine among civilians cannot be justified based on the data now available.

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*The second part of this investigation deals with the efficiency of a two-stage flocculation process for removal of viruses and native bacteria in raw river water.*

# REMOVAL OF COXSACKIE AND BACTERIAL VIRUSES IN WATER BY FLOCCULATION

## II. Removal of Coxsackie and Bacterial Viruses and the Native Bacteria in Raw Ohio River Water by Flocculation with Aluminum Sulfate and Ferric Chloride

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IN PART I of this investigation [1] a study was made of the relative efficiency of alum and ferric chloride for the removal of Coxsackie and bacterial viruses by flocculation in chemically defined water and the effects of coagulant dosage, buffering system and pH, and rate of stirring on the removal efficiency of alum were described. In the present investigation an examination was made of the effectiveness of flocculation processes as practiced in water treatment plants for removing viruses and native bacteria in raw Ohio River water. Some attention was also devoted to determining the critical contact time between microorganisms and coagulant in water by alum flocculation and to studying the interference effect of gum arabic on the removal of viruses and bacteria in water by flocculation.

### Materials and Procedures

#### Materials

Strains of Coxsackie and bacterial viruses were used as previously described.[1] By use of purified Coxsackie suspensions and dilute bacterial virus suspensions, insignificant amounts of organic materials were added to the experimental waters. Suspension of Escherichia coli prepared by washing slant cultures into sterile distilled water were employed in determining the critical time for the removal of bacteria by flocculation. The suckling mice and laboratory supplies were the same as those used in the preceding study. Standard media were used in determining the most probable numbers of coliform and total bacteria and for growing E. coli.

#### Procedures

Purification of Coxsackie Virus: The frozen, clarified suspension of Coxsackie virus used in the preceding study [1] was thawed and frozen two to three times. The suspension was then diluted in sterile distilled water containing 5 ppm $SiO_2$ and 3 millimols $Na_2CO_3$ and flocculated with 360 ppm $Al_2(SO_4)_3$. The floc was resuspended in 0.1 molar bicarbonate solution of pH 8.5–9.0 and was allowed to stand with frequent agitation

to facilitate separation of virus from the floc. After centrifuging, the supernatant containing the purified virus was removed and its pH adjusted to 7.0–7.3 with 1 N HCl (slight pink to phenol red) and its volume made up to that of the original suspension. The purified suspension was again frozen at — 70° C until used. With this purification procedure a drop of 30–50 per cent of the infective titer and a removal of 96.7–99.7 per cent of the organic nitrogen were observed, i.e., the $LD_{50}$ dropped from about 3 million to 1.5–2.0 million per 0.02 ml and the organic nitrogen from 4,000 to 1.5–15 mg/ml.

Collection of Raw River Water Samples: Most of the raw river water samples were collected from a tap at the Cincinnati Water Purification Plant, with the exception of a few water samples which were collected at the public landing located about 10 miles downstream from the plant intake.

Turbidity of the river water fluctuated from a few ppm to a high of over 600 ppm. Samples having turbidity readings over 400 ppm were found to have such high coagulant demands that several times the ordinary dosage was required for a good floc formation. Hence, all the samples in the present study showed turbidities from 16 to 255 ppm and were used in experiments within a few hours after collection.

Test Procedure: For the two-stage process, the procedure used in the first part was that previously described for the one-stage process, with alum the coagulant. In the second stage, the supernatant obtained in the first was measured into another flocculation beaker and dosed with a calculated amount of the 1 per cent $FeCl_3$ solution and sufficient 0.1 per cent CaO solution to produce a final pH in the range of 7.3–8.4 as practiced in waterworks. The treated water was stirred for 30 minutes at 81 rpm followed by 90 minutes of standing before sampling the supernatant for determination of microorganism concentration.

Determination of Concentrations of the Coxsackie and Bacterial Viruses in Samples of Settled and Control Water: The procedures for determining the bacterial and Coxsackie virus concentrations were identical to those described in the preceding report except that penicillin and streptomycin were used in inocula for mice in order to suppress possible bacterial infection.

Again, at least 18 mice were used for each dilution and total numbers were comparable to those of the preceding study.[1]

Determination of the Most Probable Number of Coliform and Total Bacteria in Samples of Settled and Control Water: Tenfold dilutions in sterile buffered distilled water were prepared from all samples of the settled water and the control. The coliform MPN (most probable number) was determined in accordance with the procedure prescribed in Standard Methods[2] and the total bacteria MPN was estimated by referring the number of positive tubes (indicated by visible bacterial growth) in each of three suitable consecutive dilutions to the MPN table.[2]

## Experimental Data

### Removal of Viruses and Native Bacteria in Raw Ohio River Water by Two-Stage Flocculation at 5° C–25° C

Using 25 ppm of $Al_2(SO_4)_3$ in the first stage and the same amount of $FeCl_3$ in the second stage, a number of determinations were made to ascertain the virus and bacteria-removal efficiency of the two-stage process at 5° C, 15° C, and 25° C. The percentage removal was computed for all four categories of microorganisms and is shown in Table 1, together with observations on turbidity, pH readings, and floc formation.

Table 1 shows that the percentage removal of Coxsackie virus in the first-

**Table 1—Efficiency of Two-Stage Flocculation in Removing Viruses and Native Bacteria in Raw Ohio River Water at Varying Temperatures**

1st stage: 25 ppm $Al_2(SO_4)_3$
2nd stage: 25 ppm $FeCl_3$

| Temperature C | Initial Turbidity (ppm) | Stage of Flocculation | Per cent Removal | | | | Final Turbidity (ppm) | Final pH | Floc Formation |
|---|---|---|---|---|---|---|---|---|---|
| | | | Coxsackie Virus | Bacterial Virus | Coliform Bacteria | Total Bacteria | | | |
| | 16-240 | 1st | 98.6 | 94.8 | 99.8 | 99.8 | 1-5 | 6.7-7.3 | Very good |
| 25 | 1-5 | 2nd | 93.8 | 98.1 | 93.8 | 94.8 | 0.1 | 7.3-7.8 | Good |
| | ..... | Combined | 99.9 | 99.9 | 99.99 | 99.99 | 0.1 | ..... | ..... |
| | 140-255 | 1st | 94.8 | 88.6 | 94.4 | 99.3 | 1-5 | 6.7-7.4 | Very good |
| 15 | 1-5 | 2nd | 92.1 | 89.9 | 82.4 | 78.0 | 0.1 | 7.3-7.7 | Good |
| | ..... | Combined | 99.6 | 98.6 | 99.9 | 99.8 | 0.1 | ..... | ..... |
| | 40-135 | 1st | 95.9 | 84.4 | 98.8 | 98.7 | 1-5 | 6.7-7.4 | Very good |
| 5 | 1-5 | 2nd | 93.8 | 94.0 | 61.6 | 88.4 | 0.1-1 | 7.3-7.7 | Good |
| | ..... | Combined | 99.6 | 99.1 | 99.95 | 99.8 | 0.1-1 | ..... | ..... |

stage flocculation was slightly but consistently higher than that of bacterial virus at all three temperatures. This observation was in contrast to that observed with water of known chemical content in the preceding study. This reversal of removal pattern was not attributable to the use of purified Coxsackie suspension. Since it has been reported that calcium and magnesium ions become attached to bacterial virus[3-5] and since raw Ohio River water contained calcium ion (23.6–53.6 ppm) and magnesium ion (6.3–13.6 ppm) during the study period, it appears possible that the presence of these metal ions slows down the formation of the aluminum-bacterial virus complex.

The removal of both viruses attained at all three temperatures by 25 ppm of $Al_2(SO_4)_3$ in the first stage compared favorably with that attained by 40 ppm in water of known chemical content in the preceding study. It was also noted (Table 1) that the floc formation with the 25 ppm $Al_2(SO_4)_3$ was good at all three temperatures, although it was slower at 5° C than at 15° C and 25° C.

The percentage removal of Coxsackie and bacterial virus obtained with 25 ppm of $FeCl_3$ in the second-stage flocculation was somewhat irregular but, as a whole, was comparable to that obtained with 25 ppm of alum in the first stage. The removal of the bacterial virus in the second stage was slightly but uniformly lower than that obtained with 20 ppm $FeCl_3$. It was shown in the preceding study that the ferric compound was definitely more efficient than alum in removing bacterial virus. Since the supernatant from the first stage was relatively free from turbidity and the floc formation in this stage was better than in the second stage, the slightly lower virus-removal efficiency of the $FeCl_3$ observed here could be due to the lack of sufficient colloidal matter to facilitate as good formation of the iron-virus complexes as in the raw water. The addition of sufficient CaO solution to give a final calcium ion concentration of 60–62 ppm in the second stage, together with the natural calcium and magnesium ions in the river water, again may have contributed to the lower

removal of the bacterial virus from the river water than was observed in the preceding study.

At all three temperatures the removals of total bacteria and of coliforms in the first stage were consistently higher than the virus removals. This bacteria-virus removal ratio is in agreement with that reported by Gilcreas and Kelly,[6] although the per cent removal was decidedly higher in this study than that obtained by them.

Lowering of the temperature from 25° C to 15° C and 5° C lowered the per cent removal of the Coxsackie virus and bacteria very slightly and somewhat more significantly lowered the per cent removal of the bacterial virus in the first stage. In the second stage, the lowering of the temperature did not materially affect the removal of viruses but lowered the removal of the bacteria more than in the first stage. Since the supernatant from the first stage carried, after the addition of CaO, about 100 ppm of calcium ion and about 10 ppm magnesium ion, and since the presence of 100–200 ppm of calcium or magnesium ion in water has been found to raise the isoelectric point of E. coli cells from the acid to the basic side of the pH range (unpublished data of S.L.C.), this reduced bacteria removal in the second stage could be explained again by the interfering effect of these bivalent cations in slowing down the formation of the iron-bacteria complexes, especially at lower temperatures.

The percentage removal of all four categories of organisms was quite high. The removal of bacterial virus and bacteria was slightly but consistently higher at 25° C than at 15° C and 5° C, and the removal of the bacteria was also slightly but consistently higher than that of the viruses. These results clearly indicate that a two-stage flocculation process employing 25 ppm each of these two coagulants removed 99.6–99.9 per cent of the Coxsackie virus at 5° C–25° C, and 99.99 and 99.8–99.95 per cent of bacteria at 25° C and 5° C–15° C, respectively.

There was no apparent relationship shown in Table 1 between the turbidity of raw river water and the removal of microorganisms. It appears, therefore, that at an alum dosage of 25 ppm and turbidity levels under 240 ppm, turbidity itself is not a satisfactory criterion for judging the efficiency of the process in removing viruses and bacteria.

### Effect of Coagulant Dosage in Removing Viruses and Bacteria in Raw Ohio River Water by Flocculation

The two-stage process was repeated at 25° C, with the dosage of alum and ferric chloride reduced to 15 ppm. Table 2 contains a summary of the virus and bacteria removal results, together with turbidity and pH values, and some observations on floc formation. For the purpose of comparison, the results obtained with 25 ppm of these coagulants at 25° C (Table 1) are reproduced in Table 2.

Removal of the Coxsackie virus by 15 ppm of aluminum sulfate was only slightly lower, but removal of the bacterial virus and the bacteria, especially the latter, was distinctly lower than that afforded by 25 ppm of this coagulant. This reduced removal of bacterial virus and bacteria may again be due to the interfering effect of calcium and magnesium ions in the raw river water, which became significant when the alum dosage was lowered from 25 to 15 ppm. It is interesting that the turbidity removal was also less with 15 ppm than with 25 ppm of alum. These results indicate that a dose of 15 ppm alum, or about 26 ppm filter alum, approaches the critical dosage for a satisfactory flocculation process under the conditions studied.

The removal of all four organisms in the second stage by 15 ppm $FeCl_3$ was

not significantly different from that attained by 25 ppm. This relatively improved removal of organisms could be due to the higher turbidity remaining in the supernatant with 15 ppm alum which facilitated a better floc formation with ferric chloride.

To test the above hypothesis a sample of raw Ohio River water having 40 ppm of turbidity was treated with 15 ppm each of both coagulants, but the second-stage flocculation was carried out without removing the floc formed in the first stage. The results showed that removal of the organisms in the first stage was similar to that shown in Table 2, but that removal of the Coxsackie and bacterial viruses was 99 and 99.8 per cent, respectively, in the second stage. These results lend support to the hypothesis and suggest the advantage of using a partially settled supernatant in the second-stage flocculation, particularly if little turbidity is left in the water after the first-stage flocculation.

Although the removal of all four organisms obtained by the two stages combined was consistently higher with 25 ppm than with 15 ppm, the difference was less significant in the virus than in the bacteria removal. Because the removal of bacteria was relatively poorer with 15 ppm alum in the first stage, it appeared that the two-stage processes in the treatment of raw water with marginal dosages of alum may yield higher removals of viruses than of bacteria. Nevertheless, in spite of this lower removal in the first stage, the total removal was still impressive, i.e., over 99 per cent of viruses and almost 98–99 per cent of the bacteria.

### Importance of Contact Time Between Microorganisms and Coagulant Before Floc Formation in the Removal of Organisms in Raw Ohio River Water by Alum Flocculation

In an earlier report[7] it was shown that efficient virus removal requires participation of the virus in the floc formation. No detectable virus removal was observed when the virus was introduced 30 minutes after dosing the water with 60 ppm of $Al_2(SO_4)_3$. Although this observation disproved the hypothesis that the flocculation process removes particulate organic matter, living or dead, by adsorption of the matter onto

**Table 2—Effect of Coagulant Dosage on the Removal of Viruses and Native Bacteria in Raw Ohio River Water by Two-Stage Flocculation at 25 C**

| Initial Turbidity (ppm) | Stage of Flocculation and Dosage (ppm) | Per cent Removal | | | | Final Turbidity (ppm) | Final pH | Floc Formation |
|---|---|---|---|---|---|---|---|---|
| | | Coxsackie Virus | Bacterial Virus | Coliform Bacteria | Total Bacteria | | | |
| | 1st | | | | | | | |
| 60-100 | Alum 15 ppm | 95.7 | 85.5 | 63.8 | 75.1 | 5-10 | 7.1-7.4 | Fairly good |
| 10-240* | Alum 25 ppm | 98.6 | 94.8 | 99.8 | 99.8 | 1-5 | 6.7-7.3 | Very good |
| | 2nd | | | | | | | |
| 5-10 | $FeCl_3$ 15 ppm | 94.6 | 96.5 | 97.2 | 90.7 | 0.1 | 8.1-8.4 | Very good |
| 1-5* | $FeCl_3$ 25 ppm | 93.8 | 98.1 | 93.8 | 94.8 | 0.1 | 7.3-7.8 | Good |
| | Combined | | | | | | | |
| ..... | 15 ppm | 99.8 | 99.5 | 99.0 | 97.6 | 0.1 | ..... | ..... |
| ..... | 25 ppm | 99.9 | 99.9 | 99.99 | 99.99 | 0.1 | ..... | ..... |

* Reproduced from Table 1 for purpose of comparison.

the formed floc, the importance of the contact time between the organisms and coagulant before floc formation remained to be determined.

In this part of the study an attempt was made, therefore, to define this critical contact time during which the viruses and bacteria must participate in the floc formation if they are to be removed from the treated water. The removal percentages were computed from the results of these experiments, together with pH and turbidity readings, and some observations were made on floc formation (Table 3).

In Table 3 it is seen that 85.0, 76.2, and 75.6 per cent of the Coxsackie virus, bacterial virus, and E. coli, respectively, were removed by 25 ppm of $Al_2(SO_4)_3$ when the organisms were introduced into the water one minue after dosing, whereas when the alum was added to the water containing the organisms, 98.6 per cent of the Coxsackie, 94.8 per cent of the bacterial virus, and 99.8 per cent of the coliform organisms were removed. When the elapsed time between addition of alum and organisms was increased to five minutes or more, none of the organisms were removed. However, when the dosage was increased to 360 ppm, about 60 per cent of the two viruses were removed when they were introduced 30 minutes after the coagulant. The latter result agrees with data observed in a separate study made on purification of viruses by flocculation which will be presented in another report.

The 60 per cent virus removal by 360

**Table 3—Effect of Contact Time Between Coagulant and Organism in the Removal of Viruses and E. coli in Raw Ohio River Water by Alum Flocculation at 25 C**

| Dosage of $Al_2(SO_4)_3$ (ppm) | Time Elapsed Between Dosing of Alum and Adding Organisms (min.) | Per cent Removal | | | Floc Formation, pH and Appearance of Settled Water |
|---|---|---|---|---|---|
| | | Coxsackie Virus | Bacterial Virus | E. coli | |
| | 0 * | 98.6 | 94.8 | 99.8 † | |
| 25 | 1 | 85.0 | 76.2 | 75.6 | No floc at time of adding organisms; settled water: pH 6.2-6.4 and turbidity 1-5 ppm |
| 25 | 5 | None | None | None | Floc well formed at time of adding organisms; settled water: pH 6.2-6.4 and turbidity 1-5 ppm |
| | 15 | None | None | None | Same as above |
| | 30 | None | None | None | Same as above |
| 360 | 30 | 62.5 | 60.3 | .... | Thick floc formed; settled water: pH 6.2-6.4 and turbidity 1-5 ppm |

* Reproduced from Table 1.
† Coliform bacteria.

ppm of alum suggests that in water dosed with very large amounts of preformed alum floc some aluminum ion may be present to react with organisms in the water. Hence, if preformed alum floc is used, no significant results will be obtained until very large amounts are applied.

It is of interest that the percentage removals of bacterial virus and E. coli obtained with 25 ppm alum and an elapsed time of one minute were again slightly lower than that of the Coxsackie virus. These differences could again be explained by the interfering effect of the calcium and magnesium ions in the water, accentuated by the shortened reaction time for the formation of aluminum-organism complexes.

### Interfering Effect of Gum Arabic on the Removal of Viruses and Native Bacteria in Raw Ohio River Water by Alum Flocculation

Gummy substances and synthetic detergents are well known for their stabilizing effect on emulsions. Because they form a protective coating on charged particles, one would expect these agents to interfere with the flocculation process. While the interfering effect by the synthetic detergent group has been summarized in the Task Group Report [8] and further investigated by Smith, Cohen, and Walton of this center,[9] that of the gummy substances remained to be ascertained.

In a preliminary experiment conducted with 15 ppm of $Al_2(SO_4)_3$ and bacterial virus in raw Ohio River water at 25° C, it was found that the gum exhibited no interfering effect on the removal of the virus until concentrations over 10 ppm were reached. Hence, a limited number of experiments were carried out to determine the interfering effect of 20 ppm of gum arabic on the removal of the Coxsackie virus, bacterial virus, and the native bacteria in raw Ohio River water by 15 ppm of $Al_2(SO_4)_3$ at 25° C. The computed percentages of the removal of all four organisms are shown in Table 4, together with the pH and turbidity readings and observation of floc formation.

As seen in Table 4, the per cent removal of the Coxsackie virus by 15 ppm of alum decreased from 96.7 to 16.7 when 20 ppm gum arabic was added. The percentage removal of other organisms under similar conditions dropped from 93.1 and 94.8 to zero. Although the interfering effect was accompanied by

**Table 4—Interfering Effect of Gum Arabic on Removal of Viruses and Native Bacteria in Raw Ohio River Water by Alum Flocculation at 25 C**

| Nature of Flocculation Process | Per cent Removal | | | | Floc Formation, pH, and Appearance of Settled Water |
|---|---|---|---|---|---|
| | Coxsackie Virus | Bacterial Virus | Coliform Bacteria | Total Bacteria | |
| $Al_2(SO_4)_3$ 15 ppm | 96.7 | 94.8 | 93.1 | 93.1 | Good floc Formation; turbidity reduced from 15-25 to 0.1-1 ppm; final pH 6.2-6.7 |
| $Al_2(SO_4)_3$ 15 ppm gum arabic 20 ppm | 16.7 | None | None | None | No apparent floc formation; turbidity slightly increased by the gum; final pH 6.2-6.7 |

a lack of floc formation, it is believed that the interference is accomplished by preventing the formation of aluminum-organism complexes because the aluminum ion was shown to inactivate bacterial virus,[3, 7] and there was no evidence of such inactivation in the presence of 20 ppm of the gum.

## Discussion

At the outset of this discussion, it should be noted that the information obtained with bacterial viruses on the efficiency of a flocculation process has limited application to the removal of pathogenic viruses from water. Being more reactive with bivalent metal ions, the bacterial viruses are removed by flocculation at a higher level in the absence of, and at a lower level in the presence of, such substances as calcium and magnesium ions than are the pathogenic viruses.

The observations made in the present study showed apparently that the removal of Coxsackie virus by alum flocculation in raw river water is slightly lower than that of native bacteria with the difference slightly greater at 5° C–15° C than at 25° C. As a whole, about 95 and 99 per cent of the Coxsackie virus and about 99 and 99.8 per cent of the native bacteria are removed by 25 ppm of alum, i.e., 44 ppm or 2.5 gpg (grains per gallon) of filter alum at 5° C–15° C and 25° C, respectively, in raw river water having turbidity levels under 260 ppm.

The significantly lower removal of the bacteria and bacterial virus and fair floc formation obtained with 15 ppm of alum (26 ppm or 1.5 gpg of filter alum) indicate that this dosage was at or close to the critical level. The fact that the residual turbidity was quite low at both dosage levels implies that coagulant doses adequate for turbidity removal are not necessarily high enough to insure efficient virus or bacterial removal.

The organism removals obtained in the second stage using $FeCl_3$ cannot be applied directly in estimating the removal of viruses and bacteria in a raw water because the supernatant obtained from the first stage in this study, and used in the second stage, was relatively free of turbidity with considerably higher calcium ion content and pH value. Even under these conditions, 15–25 ppm or about 0.9–1.4 gpg of $FeCl_3$ facilitated about 95 per cent removal of the Coxsackie virus. The lack of improvement in removal efficiency when the dosage of $FeCl_3$ was increased from 15 to 25 ppm was probably due to insufficient suspended material left in the supernatant to promote good floc formation.

From the results obtained with the two stages of flocculation combined, one sees that the removal of the Coxsackie virus in the raw water by 25 ppm of both alum and $FeCl_3$ was 99.6, 99.6, and 99.9 per cent at 5° C, 15° C, and 25° C, respectively. On the other hand, the native bacteria removal was 98–99 and 99.99 per cent with 15 and 25 ppm dosages, respectively, at 25° C, and about 99.9 per cent with 25 ppm at 5° C and 15° C.

The observation regarding the critical contact time for forming organism-coagulant complex has both theoretical and practical implications. In theory it confirms the previous observation[8] that the removal of viruses in water by this process involves, first, a reaction consisting of coagulant-cation-virus complex formation and, second, the formation of aggregates of these complexes, and that the first reaction is completed in a short time. In practice, it emphasizes the importance of rapid and complete dispersion of the coagulant chemicals in the water to be treated and the insignificant value of preformed floc in removing microorganisms.

Demonstration of the interfering effect of gum arabic on the removal of viruses

and bacteria in water by alum flocculation probably has more theoretical than practical interest. It illustrates again the importance of the formation of the coagulant-cation-organism complex as the first step in the removal mechanism and the likelihood of low removal efficiencies when interfering substances are present.

Recent published reports combine prechlorination and flocculation when comparing the relative efficiencies of stages in the removal of bacterial organisms in water treatment and no information is available regarding the comparative efficiencies of virus removals. Streeter's reports on the survey of filtration plants along the Ohio River in 1923–1924 [10] and an experimental study made with Ohio River water in 1926 [11] showed that the bacterial removal efficiency of alum flocculation as practiced at that time was decidedly lower than that attained in the present study. Streeter's reports also showed higher levels of residual turbidity in the treated water. Since it was common practice in those days to carry out the flocculation process in such manner as to leave some turbidity in the settled water in order to improve the removal efficiency of the filtration process, the bacteria removal of the flocculation process was naturally lower than that obtained in the present study. A fair comparison, therefore, cannot be made.

Improvements in flocculation processes have enabled modern waterworks operators to apply these procedures in the field with maximum practical efficiency in removing suspended matter. To insure this efficiency the information gathered in the present studies indicates that the following points should be observed:

1. The dosage of coagulant should be adequate to insure good floc formation.

2. If the raw water carries synthetic detergents and or similar substances at levels that would interfere with the process, the dosage of coagulant should be appropriately increased to counteract the interference and promote good floc formation.

3. The pH regulation of the raw water should be such that it will not cause a floc formation sufficiently rapid to reduce the contact between the coagulant cation and the suspended particles during the period of floc formation, nor too slow a floc formation to interfere with the settling of the formed floc.

4. The stirring rate employed during the flocculation period should be fast enough during the first few minutes to provide a good contact between the flocculant cation and the suspended particles and should be adjusted after this critical period to facilitate the formation of floc masses that will settle out within the prescribed period.

5. Because of the apparently interfering effect of calcium and magnesium ions on bacterial removal, it appears that flocculation of water having unusually high contents of these ions would require preflocculation treatment to reduce the metal ions or a corresponding increase of coagulant dosage, especially when the process is applied to cold water. The use of lime to raise the pH of the water should be replaced by the use of caustic soda or compounds containing no calcium or magnesium.

6. In a two-stage process the removal efficiency of the second stage may be improved by incomplete settling of the floc in the first stage, which leaves enough suspended material to form a good floc in the second stage.

## Summary and Conclusions

A study has been conducted to determine (1) the efficiency of a two-stage flocculation process for removing Coxsackie and bacterial viruses and native coliform and total bacteria in raw Ohio River water at 5° C, 15° C, and 25° C, (2) the critical time in relation to floc

formation for the removal of these viruses and E. coli in the flocculation period, and (3) the interfering effect of gum arabic on the removal of these viruses and native bacteria in raw river water by alum flocculation. From the observations made in this study, the following summary is prepared:

1. Based on the results obtained in the first stage, removal of the Coxsackie virus by 25 ppm of alum, i.e., 44 ppm of filter alum, in raw river water having turbidity readings under 260 ppm was 95 and 99 per cent at 5° C–15° C and 25° C, respectively, and by 15 ppm of alum, i.e., 26 ppm of filter alum, 95.7 per cent at 25° C. In the same samples removal of the bacteria showed insignificant differences between E. coli and total bacteria. It was slightly higher than Coxsackie virus removal with 25 ppm and significantly lower with 15 ppm of alum, with removal of the bacterial virus slightly but consistently lower than that of the Coxsackie virus.

2. The virus-removal efficiency of the $FeCl_3$ used in the second stage was comparable to that of alum, but its bacterial-removal efficiency was lower. These relatively poor results were attributed to poor floc formation due to inadequate turbidity. The lower bacterial removal was enhanced by the interfering effect of about 100 ppm of calcium ion and over 10 ppm of magnesium ion, the effect of which was exaggerated at lower temperatures.

3. Removal of Coxsackie virus by the two stages combined was 99.6 per cent at 5° C and 15° C, and 99.9 per cent at 25° C with 25 ppm coagulant in each stage. With 15 ppm coagulant, Coxsackie removal was 99.8 per cent at 25° C. At the same time removal of native bacteria was 98–99 and 99.99 per cent by 15 and 25 ppm dosages, respectively, at 25° C, and about 99.99 per cent by the 25 ppm dosage at 5° C and 15° C.

4. Removal of the Coxsackie virus was slightly higher in general than that of the bacterial virus, contrary to the findings in the preceding study [1] made with water of known chemical content. The presence of calcium and magnesium ions in the raw water and the addition of CaO in the second stage were believed to have interfered with the formation of the coagulant-cation bacterial-virus complex.

5. The critical time for the formation of coagulant-microorganism complex in relation to removal of viruses and E. coli by practical dosages of alum at 25° C was confined to the first few minutes after addition of the coagulant. The removal of about 60 per cent of the Coxsackie and bacterial virus by 360 ppm of alum when the viruses were introduced 30 minutes after the alum addition was attributed to the presence of a small amount of aluminum ion in combination with this large coagulant dose.

6. Gum arabic at a concentration of 20 ppm was found to prevent completely the formation of floc and removal of Coxsackie and bacterial viruses and native bacteria in raw Ohio River water dosed with 15 ppm of alum.

As a result of these observations, a number of suggestions were presented for obtaining practical maximum efficiency in removing viruses as well as bacteria and other particulate matter in water supplies by flocculation.

ACKNOWLEDGMENT—The help of Dr. Eugene Harris of this center in computing the $LD_{50}$ of the Coxsackie virus is gratefully acknowledged.

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The authors are associated with the Robert A. Taft Sanitary Engineering Center, Public Health Service, Department of Health, Education, and Welfare, Cincinnati, Ohio.

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## Geriatric Rehabilitation Course

Principles and Practice of Geriatric Rehabilitation is a two-week course to be given by the New York Medical College-Metropolitan Hospital Center, April 21 to May 2. Designed for registered nurses, occupational and physical therapists, and social workers, the course is planned to provide intensified training in the rehabilitation care of the elderly, chronically ill patient.

Tuition for the course is $100. A limited number of traineeships may be available through a grant from the U. S. Office of Vocational Rehabilitation. New York State scholarships are also available to state residents or to those who expect to work in the state. Request for scholarships should be made at the time of application which should be made as early as possible since enrollment is limited. Dr. Jerome S. Tobis, Director, Department of Physical Medicine and Rehabilitation, New York Medical College, One East 105th St., New York 29, N. Y.

*This investigation deals with the pregnancy experience of members of the Health Insurance Plan as compared with that of the general population of New York City. The findings concern perinatal mortality and prematurity and are provocative, indeed.*

# COMPARISON OF PREMATURITY AND PERINATAL MORTALITY IN A GENERAL POPULATION AND IN THE POPULATION OF A PREPAID GROUP PRACTICE, MEDICAL CARE PLAN

*Sam Shapiro, F.A.P.H.A.; Louis Weiner, F.A.P.H.A.; and Paul M. Densen, D.Sc., F.A.P.H.A.*

EFFORTS TO identify the etiologic factors involved in premature birth and perinatal mortality encounter highly complex and perplexing problems. An underlying difficulty is the lack of basic knowledge regarding the physical, biologic, and social mechanisms responsible for pregnancy loss. However, "it is not always necessary to know the finite causes of disease or death in order to take effective measures to control them. . . . If the mass factors (man's physical and social environment) can be altered favorably, a preventive health program is practical whether or not the basic cause is understood." [1]

This study is concerned with the relationship between one of these "mass factors," the mode of providing medical care and the outcome of pregnancy. Two populations in the same geographic area but subject to different medical care settings are compared with regard to the stage of pregnancy when prenatal care begins, prematurity and perinatal mortality.[2] The study groups are the enrollees in a comprehensive, prepaid group practice plan, the Health Insurance Plan of Greater New York (HIP), and the population of New York City, considered in general and then restricted to patients of private physicians primarily in solo practice.

## Method

The study was undertaken jointly by HIP and the New York City Health Department. Data for the two study groups were obtained from punched cards prepared routinely by the Health Department from official records of live births, deaths, and fetal deaths before the study was planned. Included in the tabulations are the total deliveries in the HIP population attended by HIP doctors in 1955 and a systematic random sample of the 1955 deliveries in New

[1] Yankauer, Alfred. The Public Health Aspects of Perinatal Mortality. New York State J. Med. Vol. 57, No. 15, August 1, 1957.

[2] Defined as the mortality among infants under one week of age plus fetal deaths of 20 weeks gestation or more.

York City as a whole.[3] Excluded from the study are deliveries to nonresidents in the city.

The sizes of the study groups follow:

New York City—15,088 live births (10 per cent sample); 698 fetal deaths of 20 weeks or more gestation (20 per cent sample); 2,731 infant deaths under seven days of age (100 per cent)

HIP (all 100 per cent)—5,511 live births; 73 fetal deaths of 20 weeks or more gestation; 54 infant deaths under seven days of age

## Study Setting

The medical care setting for the general population of New York City has in its background many years of determined effort by public and voluntary health agencies and medical organizations to decrease the hazards associated with pregnancy. The historic studies of the New York City Academy of Medicine and the reports of Baumgartner, Jacobziner, Pakter, Wallace, and others in the New York Health Department are part of the endeavor to improve perinatal care.[4] These activities have occurred in an area where availability of physicians and medical facilities present no problem and where practically all births (over 99 per cent) occur in hospitals. Furthermore, along with the rest of the country, New York City has experienced a rapid spread of insurance for inhospital care. By 1955 hospital insurance was carried by perhaps more than three-fourths of the city's population.

A comparatively new element in the medical care picture of the city is HIP, which started operations in 1947. In return for a premium which pays the entire cost[5] HIP enrollees are entitled to receive comprehensive medical care from physicians associated with 32 medical groups distributed throughout New York City and Nassau County. Coverage is for preventive and diagnostic medical services, as well as for therapy of specific illness, from family physicians and all types of specialists, in the doctor's office, the home and the hospital. Also covered are laboratory, radiologic, and other diagnostic tests. There are no waiting periods for service and no limitations on the number of services or the duration of medical care. All enrollees carry hospital insurance.

With rare exceptions obstetrical services in HIP are rendered by specialists in obstetrics. In 1955 there were 69 obstetrician-gynecologists in the plan, of whom 45 were diplomates of the American Board of Obstetrics and Gynecology; the remaining 24 were approved by the Medical Control Board of HIP as having comparable training and experience. How much obstetrical care in the city as a whole is provided by board-certified obstetricians, and how much by other medical practitioners, is not known. There were, however, 592 obstetrician-gynecologist diplomates in the city during 1955,[6] or about one per 3,300 women in the child-bearing ages of 15–44 years. The corresponding ratio for HIP was one per 1,000.

By 1955 the enrollment in HIP was 416,000, a population equal to the size of a city like Rochester, N. Y. Three out of four of the subscribers had been

[3] See Appendix for a detailed description of the methodology. Tables A and B present the basic frequencies employed in this study.

[4] See, for example:

Kohl, S. G. Perinatal Mortality in New York City. Cambridge, Mass.: Harvard University Press, 1955.

New York Academy of Medicine, Maternal Mortality in New York City—A Study of All Puerperal Deaths 1930–1932. New York: Commonwealth Fund, 1933.

Baumgartner, Leona, et al. Prenatal Care in New York City, 1955. Pub. Health Rep. 69:937–944 (Oct.), 1954.

Pakter, Jean, et al. Perinatal Mortality Rates as an Aid in Assessing Maternity Care. A.J.P.H. 45:728–735 (June), 1955.

[5] The only exception to this is a possible $2 charge for a night call to the home between 10 p.m. and 7 a.m.

[6] As determined from the New York State Medical Directory for 1955.

**Table 1—Selected Characteristics of Live Births, New York City and HIP, 1955**

| Characteristics | New York City * | | HIP | |
|---|---|---|---|---|
| | No. | Per cent | No. | Per cent |
| a. Ethnic Group (Total) † | 150,880 | 100.0 | 5,511 | 100.0 |
| White | 105,600 | 70.0 | 4,857 | 88.1 |
| Nonwhite | 26,770 | 17.7 | 575 | 10.4 |
| Puerto Rican | 18,510 | 12.3 | 79 | 1.4 |
| b. Age of Mother (Total) | 150,880 | 100.0 | 5,511 | 100.0 |
| Under 20 years | 10,480 | 6.9 | 53 | 1.0 |
| 20–24 | 44,650 | 29.6 | 884 | 16.0 |
| 25–29 | 49,030 | 32.5 | 2,184 | 39.6 |
| 30–34 | 30,030 | 19.9 | 1,574 | 28.6 |
| 35–39 | 13,510 | 9.0 | 663 | 12.0 |
| 40 or more | 3,180 | 2.1 | 153 | 2.8 |
| c. Birth Order (Total) ‡ | 150,880 | 100.0 | 5,511 | 100.0 |
| 1 | 48,140 | 31.9 | 1,470 | 26.7 |
| 2 | 44,450 | 29.5 | 1,844 | 33.5 |
| 3 | 28,020 | 18.6 | 1,185 | 21.5 |
| 4 or more | 30,260 | 20.1 | 1,012 | 18.4 |
| d. Percentage of Live Births | | | | |
| Male | .... | 51.4 | .... | 51.2 |
| Single births | .... | 97.8 | .... | 98.0 |
| Preceded by at least one fetal death | .... | 21.2 | .... | 19.7 |

* Based on a 10 per cent sample.

† Classification based on nativity of mother and race of both parents stated on birth record. "Puerto Rican" refers to births to women born in Puerto Rico.

‡ Refers to the sum of the number of live births (including current birth) and fetal deaths that the mother has had. Total includes birth order "not stated."

in the plan for at least three years and half had been in for more than five years. Accordingly, most of the enrolled population had been exposed for several years to the full range of services provided by the plan and to a health education program which emphasized the value of general preventive medical care and of early prenatal care, in particular.

About 72 per cent of the enrollees in HIP during 1955 had entered the plan through group contracts with the official agencies of New York City, including such departments as the Board of Education, the Police, Fire, and Sanitation Departments, and the Transit Authority. The largest sources of enrollment next to this group were union welfare funds which accounted for one in seven of HIP's members in 1955.

## Comparison of Demographic Characteristics

The two study populations are compared in Table 1 with respect to a number of characteristics related to prematurity and perinatal mortality. The New York City general population is far more heavily weighted with nonwhite and Puerto Rican births than is the HIP group.[7] Also, HIP has very few births

[7] The study populations are classified into three ethnic-racial groups based on nativity of mother and race reported on the vital record. These groups are white, nonwhite, and Puerto

to women under 20 years of age and the proportion born to women 20–24 years old is low as compared with that for the city as a whole.[8]

Far fewer differences are found in the birth order distributions than are noted for age of mother. However, New York City's births are somewhat more heavily weighted toward first births than HIP's. When the comparison of birth order composition is made on an age-specific basis for each ethnic group, it is clear that the moderate variation in birth order which does exist is attributable to differentials in age and ethnic composition.[9] This makes it unnecessary to standardize simultaneously for age of mother and birth order.

The two groups are comparable in a number of characteristics important for this investigation. About the same percentage of HIP and New York City multiparous women reported a fetal loss prior to this pregnancy. Also, the sex and plurality composition of the children born are almost identical in the two populations.

No information was available on the punched cards used in this study for classifying directly the HIP and New York City births, fetal and early infant deaths by socioeconomic status. However, the results of a household survey conducted during 1952 [10] indicate that larger proportions of the HIP enrollees were in occupational and educational classes associated with high socioeconomic status than was the case for the city at large.

Several classifications are introduced in the study which take into account the socioeconomic factor. Data are shown separately for white and nonwhite births and for Puerto Rican births when the frequencies are large enough.[11] In addition, a special category was established for New York City births. This is restricted to births and fetal deaths in hospitals among patients of private physicans. In effect, this category eliminates part of the low-income groups in New York City.[12]

A great majority of the deliveries among the white women in New York were by private physicians, but in the nonwhite and Puerto Rican groups all but a small percentage of the mothers were admitted to hospitals as general service cases (Table 2).

Prematurity and perinatal mortality rates are also given for white deliveries in high-income health areas of New York City for comparison with rates in HIP. Two groups of areas were formed for this purpose. The criteria for inclusion in both were that the median family income was in excess of $5,000 according to the 1950 census and that less than 5 per cent of the births in the area during 1955 were nonwhite. One group consisted of 16 health areas throughout the city for which the median income was $6,100 as compared with the median of $3,500 for the city as a whole. The other group consisted of high-income areas in the

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Rican. All births and fetal deaths are classified Puerto Rican if the mother was born in Puerto Rico, regardless of "race entry."

[8] This holds for each ethnic group. Data are not shown separately in this detail, but will be made available on request.

[9] One reason for the age differentials between HIP and New York City is the fact that the source of HIP's enrollment is employment groups.

[10] Health and Medical Care in New York City. Published by the Harvard University Press for the Commonwealth Fund, 1957.

[11] It should be noted that throughout the report these three ethnic groups are mutually exclusive and neither "white" nor "nonwhite" includes births to Puerto Rican mothers.

[12] Identification of live births and fetal deaths attended by private physicians (i.e., nonward admissions) was made by means of the following item in the "Confidential—Supplementary Medical Report" of the vital record. Indicate by X whether mother was:

Private physician's patient ☐
General service patient ☐

All but 2 per cent of the records in the New York City study group contained information for this item. The proportion of "not stated" for HIP was even lower.

**Table 2—Per cent of Live Births and Fetal Deaths Attended by Private Physicians, by Ethnic Group, New York City and HIP, 1955 (Single and Plural Live Births Combined)**

| Ethnic Group | Per cent Attended by Private Physicians | | | |
|---|---|---|---|---|
| | Live Births | | Fetal Deaths (20 Weeks Gestation or More) | |
| | New York City | HIP | New York City | HIP |
| Total | 60.8 | 99.3 | 44.7 | 93.2 |
| White | 83.1 | 99.6 | 74.9 | 98.3 |
| Nonwhite | 10.9 | 97.0 | 9.1 | * |
| Puerto Rican | 4.9 | 94.9 | 2.9 | * |

NOTE: "Private Physicians" refer to nonward hospital admissions and complements of percentages in this table refer almost entirely to ward (or general service) admissions. A small proportion of the births (under 1 per cent) occurred outside the hospital.

* Not computed, numerator of rate less than 10.

Borough of Queens (10 health areas) where it is believed that in-migration between the 1950 Census and the study year (1955) has not lowered the area's economic level.

## Findings

### Prenatal Care

Based on information from the vital records concerning "period of gestation," "date prenatal care began," and "delivery date," estimates have been made of the stage of pregnancy when prenatal care was started.[13]

About half of the women (47 per cent) who had a baby in New York City during 1955 began to receive prenatal care in the first trimester of pregnancy; 16 per cent either did not come under obstetrical supervision until the third trimester, or until the mother went into labor (Table 3). White women, at all ages and parity, had a distinctly better record for early prenatal care than women of other ethnic groups.[14] The proportion of white mothers who obtained prenatal care in the first trimester was 61 per cent, which was several times the figure for nonwhite and Puerto Rican mothers (16 and 13 per cent, respectively). Furthermore, a third of the women in the latter two groups appear to have received prenatal care only in the third trimester or not at all.

In HIP, as a whole, close to two-thirds (67 per cent) of the women started prenatal care during the first trimester and 4.5 per cent delayed prenatal care until the last trimester. In each ethnic group and at each age and parity of mother,[14] a higher percentage of women in HIP than in New York City came under obstetrical care early in pregnancy (Table 3). By far the largest differentials between HIP and the city, on an over-all basis, occurred among the nonwhite and Puerto Rican mothers.

[13] Where there has been a change in the source of the prenatal care, these estimates may reflect only the period that the women were under the last doctor's care. For this group, the size of which is unknown, a reported late start in prenatal care may really mean that the doctor supervising the pregnancy in the terminal stages had no knowledge about medical observations made earlier in the course of the pregnancy.

[14] Data are not shown because of space limitation, but will be made available on request.

**Table 3—Live Births by Trimester of Pregnancy When Prenatal Care Began, Ethnic Groups in New York City and HIP, 1955 (Single and Plural Live Births Combined)**

| Ethnic Group | Per cent * of Live Births with Prenatal Care Begun in | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | First Trimester | | | Second Trimester | | | Third Trimester or No Care | | |
| | New York City | | | New York City | | | New York City | | |
| | Total | Private Physician | HIP | Total | Private Physician | HIP | Total | Private Physician | HIP |
| Total | 47.4 | 67.6 | 67.4 | 32.4 | 24.3 | 24.6 | 16.3 | 5.1 | 4.5 |
| White | 61.3 | 68.5 | 69.1 | 26.7 | 23.6 | 23.4 | 8.8 | 5.0 | 4.0 |
| Nonwhite | 16.1 | 49.0 | 55.3 | 44.6 | 37.9 | 32.5 | 34.1 | 9.0 | 7.8 |
| Puerto Rican | 12.9 | 41.1 | 48.1 | 47.1 | 41.1 | 41.8 | 33.0 | 13.3 | 7.6 |

* In each population group the sum of percentages given for first, second, and third trimester and no care does not total 100 per cent. The difference represents the proportion of live birth certificates which did not contain data necessary to classify the birth by stage of pregnancy when prenatal care began.

Confining the comparison to women who were patients of private physicians, brings the New York City and HIP figures for each ethnic group close together. For all groups in the city combined the proportion of private-physician patients who began to receive prenatal care in the first trimester was 68 per cent, or virtually the same as for HIP (67 per cent).

Of great importance is the significance of the reduction in HIP-New York City differentials when ward patients are removed from the New York City group. This may reflect only that the women in HIP come from population groups that ordinarily use private physicians. Or it may indicate that enrollment in HIP causes certain groups, particularly among nonwhites and Puerto Ricans, to modify their practice with regard to prenatal care and to adopt the pattern followed by patients of private physicians in the general community. Information on the socioeconomic status of such individuals would help to clarify this issue.

The finding that in both the New York City private patient group and the HIP group white women were more likely to start prenatal care early than nonwhite and Puerto Rican women suggests that there are underlying differences among the ethnic groups which persist even when there is no apparent cost barrier to the receipt of obstetrical care. This may have its origin in the experience of friends and neighbors, in the employment status of the mother, or most broadly in the cultural background of the group.

### Prematurity

The prematurity rate differed greatly among the ethnic groups in New York City.[15] For white births the rate (3.0 per 100 live births) was almost half that for nonwhites (15.6). The prematurity rate among Puerto Rican births (11.7) fell about midway between the figures for the other two groups (Table 4).

[15] Infants weighing 2,500 gm or less at birth are classified as "premature." There is some question about the applicability of this definition to all ethnic groups. However, in the absence of other criteria that could be introduced a uniform definition in terms of birth weight is used in this report for white, nonwhite, and Puerto Rican births.

**Table 4—Prematurity Rates by Ethnic Group, Total and Single Live Births, New York City and HIP, 1955**

| Ethnic Group | Rate per 100 Live Births* | | | Comparison Between | | | |
|---|---|---|---|---|---|---|---|
| | New York City | | | HIP and Total New York City | | HIP and New York City (Private Physician) | |
| | Total | Private Physician | HIP | Difference | Standard Error† | Difference | Standard Error† |
| **Single and Plural Live Births** | | | | | | | |
| Total | 9.8 | 7.8 | 7.0 | 2.8 | 0.42 | 0.8 | 0.44 |
| White | 8.0 | 7.7 | 6.6 | 1.4 | 0.44 | 1.1 | 0.46 |
| Nonwhite | 15.6 | 12.3 | 10.6 | 5.0 | 1.46 | 1.7 | 2.31 |
| Puerto Rican | 11.7 | ‡ | ‡ | ... | ... | ... | ... |
| **Single Live Births** | | | | | | | |
| Total | 8.7 | 6.7 | 6.3 | 2.4 | 0.40 | 0.4 | 0.42 |
| White | 7.0 | 6.6 | 5.9 | 1.1 | 0.42 | 0.7 | 0.43 |
| Nonwhite | 14.2 | 11.1 | 9.4 | 4.7 | 1.41 | 1.6 | 2.22 |
| Puerto Rican | 10.6 | ‡ | ‡ | ... | ... | ... | ... |

* Prematurity rate is defined as the number of live births 2,500 gm. or less, at birth per 100 live births.
† Chances are less than one in 20 that a difference twice the standard error or greater is due to random factors.
‡ Not computed, numerator of rate less than 10.

Among both white and nonwhite births, prematurity rates were appreciably lower in HIP than in the city.[16] With some exceptions the HIP rates for specific ages of mother and birth orders were below the corresponding city figures.[17] Adjusting the HIP white and nonwhite rates to take account of the differences in the ages of the mothers reduces but does not eliminate the HIP-New York City differentials (Table 5). The prematurity rates in HIP, after adjustment for age of mother, were 6.9 and 10.8 per 100 live births among the white and nonwhite births, respectively.

The fact that HIP women tended to start prenatal care earlier than women in the city as a whole (private patients and ward admissions combined) was not the major reason the prematurity rate in HIP was lower than in the city. From Table 6 it is clear HIP's rate was consistently below the city's regardless of the trimester in which the obstetrician was first seen. Table 6 also gives prematurity rates for two groups of multiparous women,[18] those whose previous pregnancies had never terminated in a fetal death and those who reported at least one fetal loss. HIP's prematurity rate is lower than the city's in each of these groups among both white and nonwhite births. Further exploration of this interesting finding would require additional information about the course of the present and prior pregnancies.

When the comparison is limited to patients of private physicians prematurity rates for New York City births closely approximate HIP rates. After

[16] The prematurity rate for Puerto Rican births in HIP is not computed because of the small number of cases in the study.
[17] Ibid. footnote No. 14.
[18] To increase homogeneity between HIP and New York City births the comparison is limited to prematurity rates among live births of second and third birth order.

**Table 5—Prematurity Rates Among White and Nonwhite Live Births, Adjusted for Age of Mother, Total and Single Live Births, New York City and HIP, 1955**

| Ethnic Group | Rate per 100 Live Births * | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | All Births | | | | Private Physician | | | |
| | Total New York City | HIP Adjusted† | Difference | Standard Error‡ | Total New York City | HIP Adjusted† | Difference | Standard Error‡ |
| **Single and Plural Live Births** | | | | | | | | |
| Total (excluding Puerto Ricans) | 9.3 | 7.7 | 1.6 | 0.44 | 7.8 | 7.0 | 0.8 | 0.45 |
| White | 8.0 | 6.9 | 1.1 | 0.47 | 7.7 | 6.9 | 0.8 | 0.46 |
| Nonwhite | 15.0 | 10.8 | 4.2 | 1.49 | 11.4 | 10.7 | 0.6 | 2.29 |
| **Single Live Births** | | | | | | | | |
| Total (excluding Puerto Ricans) | 8.1 | 6.7 | 1.4 | 0.42 | 6.7 | 6.3 | 0.4 | 0.45 |
| White | 6.9 | 6.2 | 0.7 | 0.43 | 6.6 | 6.2 | 0.4 | 0.44 |
| Nonwhite | 13.4 | 8.9 | 4.5 | 1.40 | 10.1 | 9.2 | 0.9 | 2.18 |

* Prematurity rate is defined as the number of live births 2,500 gm. or less, at birth per 100 births. Rates in this table exclude births to Puerto Rican mothers and to women under 20 years of age, because of small numbers in these categories in HIP.

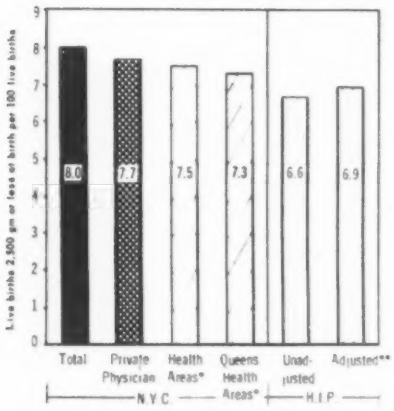
† Adjusted to age of mother distributions of New York City births (excluding births to women under 20) in white and nonwhite groups. Totals for HIP are age and race adjusted.

‡ Chances are less than one in 20 that a difference twice the standard error or greater is due to random factors.

**Table 6—Prematurity Rates Among White and Nonwhite Live Births by Trimester When Prenatal Care Began and Prior Fetal Loss, New York City and HIP, 1955 (Single and Plural Births Combined)**

| Trimester Prenatal Care Began, Prior Fetal Death | Rate per 100 Live Births * | | | |
|---|---|---|---|---|
| | White | | Nonwhite | |
| | New York City | HIP | New York City | HIP |
| Trimester | | | | |
| First | 7.3 | 5.8 | 14.5 | 11.0 |
| Second | 9.0 | 8.4 | 13.9 | 10.2 |
| Third or no care | 9.2 | 8.7 | 17.7 | 13.3 |
| Prior Fetal Deaths Among Births of Second and Third Order | | | | |
| None | 6.6 | 5.6 | 13.9 | 12.2 |
| One or more | 11.0 | 9.6 | 14.0 | 10.8 |

* Prematurity rate is defined as the number of live births 2,500 gm. or less, at birth per 100 live births.




* Median income over $5,000 (as reported in 1950 census).
** Adjusted to age of mother distribution of live births attended by private physicians in New York City.

**Figure 1—Prematurity Rates Among White Live Births, New York City and HIP, 1955**

adjustment for differences in age and racial composition, the rate in HIP (7.0 per 100 live births) is only about 10 per cent lower than the rate (7.8) among the births to women under the care of private doctors in the city (Table 5).[19] The gap is further reduced when the rates are made specific for single births.

The prematurity rate for white births in HIP is presented in Figure 1 along with the corresponding rates for the city as a whole, for New York City private physician patients and for two sets of areas that had high average incomes in the 1950 Census. The lowest of the New York City rates (7.3) occurred in the Queens' group of high-income areas. This is slightly above the observed rate in HIP (6.6) and close to the rate for HIP adjusted to the age composition of women in New York City who used private physicians (6.9).

[19] These rates exclude births to Puerto Rican women and to mothers under 20 years of age because of the very small numbers of such births in HIP.

For the nonwhite births there is no corresponding basis for examining prematurity rates for high-income geographic areas. However, the fact that only 10 per cent of the nonwhite births in the city were to patients of private physicians would indicate that the "private physician" category in New York City represents a high socioeconomic group in the nonwhite population. It is of interest, therefore, that the prematurity rate for this group (11.4) and the rate for the nonwhites in HIP (10.7) after adjustment for age are about equal.

### Perinatal Mortality

One way of expressing progress toward the objective of providing adequate prenatal care, controlling morbidity in pregnancy, and reducing prematurity is in terms of decreases in maternal and perinatal mortality.[20]

Perinatal loss is defined in this study as infant deaths under seven days, plus fetal deaths in pregnancies of 20 weeks gestation or more.[21] The rate for each of these components varied greatly among the ethnic groups in New York City (Table 7). As in the case of the prematurity rate, mortality in early infancy and fetal loss among Puerto Rican births fell between the white and non-

[20] Maternal mortality is a minimal problem in New York City today. The rate for the city in 1955 was five per 10,000 live births plus fetal deaths. The corresponding rate for HIP was two per 10,000. Due to the small number of cases, the difference between the rates might easily have arisen from chance factors.

[21] The perinatal mortality rate is computed as follows:

$$R = \frac{\text{Infant deaths under seven days plus fetal deaths of at least 20 weeks gestation}}{\text{Live births plus fetal deaths of at least 20 weeks gestation}}$$

Data are given in the Appendix on deaths during the first four weeks after birth and on fetal deaths of 20 or more and 28 or more weeks gestation for recombinations which conform with other definitions of perinatal mortality.

**Table 7—Mortality Rates in Early Infancy and Fetal Death Ratios by Ethnic Group, New York City and Hip, 1955 (Single and Plural Births Combined)**

| Ethnic Group | Infant Deaths Under 7 Days per 1,000 Live Births | | | Fetal Deaths (20 Weeks Gestation or More) per 1,000 Live Births | | |
|---|---|---|---|---|---|---|
| | New York City | | | New York City | | |
| | Total | Private Physician | HIP | Total | Private Physician | HIP |
| Total | 18.1 | 13.5 | 9.8 | 23.1 | 17.0 | 13.2 |
| White | 14.7 | 13.2 | 8.9 | 18.3 | 16.5 | 11.9 |
| Nonwhite | 27.9 | 20.5 | 15.7 | 38.8 | 32.4 | 20.9 |
| Puerto Rican | 23.4 | 15.6 | * | 27.8 | * | * |

* Not computed, numerator of rate less than 10.

white experience. Exclusion of ward admissions reduces all of the rates and closes the range among ethnic groups somewhat, but the differences between the white and nonwhite rates are still substantial.

The magnitude of both the infant loss rate under one week and fetal mortality ratio was strikingly different in HIP and New York City. In HIP each of these rates was well below the corresponding rate among deliveries in the city at large for both the white and nonwhite groups. Furthermore, appreciable differences between the rates for HIP and New York City remain when the comparison is restricted to patients of private physicians.

The lower prematurity rate in HIP is a factor in the differentials observed in the mortality under one week. Adjustment of the HIP births to the weight distribution of New York City births reduces the HIP-New York City differential by about a third.

In addition, the infant death rates under one week were examined for premature and mature groups of white infants (Table 8). The data are too fragmentary to reach definitive conclu-

**Table 8—Mortality Rates in Early Infancy Among White Live Births, by Weight at Birth, New York City and HIP, 1955 (Single and Plural Births Combined)**

| Weight at Birth | Rate per 1,000 Live Births * | | |
|---|---|---|---|
| | New York City | | |
| | Total | Private Physican | HIP |
| Total | 14.7 | 13.2 | 8.9 |
| 2,500 gm or less (premature) | 122.1 | 112.9 | 90.1 |
| More than 2,500 gm (mature) | 4.4 | 4.3 | 2.9 |

* Infant deaths under 7 days per 1,000 live births.

**Table 9—Perinatal Mortality Rates by Ethnic Group, Total and Single Births and Fetal Deaths, New York City and HIP, 1955**

| Ethnic Group | Rate per 1,000 Live Births Plus Fetal Deaths* | | | Comparison Between | | | |
|---|---|---|---|---|---|---|---|
| | New York City | | | HIP and Total New York City | | HIP and New York City (Private Physician) | |
| | Total | Private Physician | HIP | Difference | Standard Error† | Difference | Standard Error† |
| **Single and Plural Births and Fetal Deaths** | | | | | | | |
| Total | 40.3 | 30.0 | 22.7 | 17.6 | 2.14 | 7.3 | 2.18 |
| White | 32.4 | 29.3 | 20.5 | 11.9 | 2.22 | 8.8 | 2.23 |
| Nonwhite | 64.3 | 51.2 | 35.8 | 28.5 | 7.45 | 15.4 | 10.29 |
| Puerto Rican | 49.9 | 31.7 | ‡ | .... | .... | .... | .... |
| **Single Births and Fetal Deaths** | | | | | | | |
| Total | 37.5 | 27.7 | 21.7 | 15.8 | 2.19 | 6.0 | 2.22 |
| White | 30.0 | 27.0 | 19.9 | 10.1 | 2.23 | 7.1 | 2.26 |
| Nonwhite | 61.2 | 47.7 | 31.5 | 29.7 | 7.88 | 16.2 | 10.57 |
| Puerto Rican | 45.6 | 30.5 | ‡ | .... | .... | .... | .... |

* Perinatal mortality rate is defined as infant deaths under seven days plus fetal deaths, 20 weeks gestation or more per 1,000 live births plus fetal deaths (20 weeks gestation or more).

† Chances are less than one in 20 that a difference twice the standard error or greater is due to random factors.

‡ Not computed, numerator of rate less than 10.

sions, but among white births[22] there is some evidence that HIP's rates may be lower in both weight groups, 2,500 gm. or less, and over 2,500 gm. A further breakdown of the prematurely born shows that the HIP-New York City (private physician) differential in mortality rates under one week resulted in the main from lower rates among infants weighing over 2,000 gm at birth. Additional observations are required which permit a repetition of this type of comparison for more detailed birth weight subdivisions.

The consistently lower HIP rates for early infant loss and for fetal mortality result in substantially lower over-all perinatal mortailty rates in HIP than in the city's population (Table 9). One value in combining the two components of pregnancy loss in a perinatal mortality rate is that it provides a firmer basis for examining New York City-HIP differentials with respect to a number of critical factors presented below:

### Age of Mother and Birth Order

The perinatal mortality rates after adjustment for age of mother and ethnic differentials[23] were appreciably lower in HIP than in New York City. The comparative rates are 23.9 and 38.1 per 1,000 live births and fetal deaths for HIP (adjusted to total city composition) and New York City, respectively; 21.3 and 30.1 for HIP (adjusted to private

[22] The numbers are too small for the nonwhite births, even for a tentative examination of this issue.

[23] Excluded from these rates for HIP and New York City are births and fetal deaths among Puerto Rican mothers and women under 20 years of age because of the small size of these groups in HIP.

**Table 10—Perinatal Mortality Rates Among White and Nonwhite Deliveries, Adjusted for Age of Mother, Total and Single Births and Fetal Deaths, New York City and HIP, 1955**

| Ethnic Group | Rate per 1,000 Live Births and Fetal Deaths * | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | All Births | | | | Private Physician | | | |
| | Total New York City | HIP Adjusted † | Difference | Standard Error ‡ | Total New York City | HIP Adjusted † | Difference | Standard Error ‡ |
| | Single and Plural Births and Fetal Deaths Combined | | | | | | | |
| Total (excluding Puerto Ricans) | 38.1 | 23.9 | 14.2 | 2.38 | 30.1 | 21.3 | 8.8 | 2.19 |
| White | 32.2 | 20.8 | 11.4 | 2.31 | 29.4 | 20.8 | 8.6 | 2.25 |
| Nonwhite | 63.7 | 37.1 | 26.6 | 8.63 | 53.0 | 35.6 | 17.4 | 11.12 |
| | Single Births and Fetal Deaths | | | | | | | |
| Total (excluding Puerto Ricans) | 35.6 | 21.7 | 13.9 | 2.27 | 27.9 | 20.4 | 7.5 | 2.17 |
| White | 29.8 | 20.1 | 9.7 | 2.28 | 27.1 | 20.1 | 7.0 | 2.29 |
| Nonwhite | 60.6 | 28.3 | 32.3 | 7.37 | 49.3 | 29.4 | 19.9 | 10.55 |

* Perinatal mortality rate is defined as infant deaths under seven days plus fetal deaths, 20 weeks gestation or more per 1,000 live births plus fetal deaths, (20 weeks gestation or more).

† Adjusted to age of mother distributions of New York City births (excluding births to women under 20) in white and nonwhite groups. "Age of mother unknown" distributed proportionately. Totals for HIP are age and race adjusted.

‡ Chances are less than one in 20 that a difference twice the standard errors or greater is due to random factors.

patient group in the city) and New York City, respectively (Table 10). At all specific ages of mothers and birth orders for both the white and nonwhite group HIP's perinatal mortality rates were below the city's [24] (Figure 2).

### Hospital Admissions

The lower rate in HIP is not due to differences in the kinds of hospitals used by each population. The observed number of perinatal deaths among births to HIP women (105) was lower than would have been expected (138), if the rates were the same as among births to other women admitted to the same hospitals by private doctors.[25]

### Socioeconomic Status

The lower perinatal mortality rate in HIP is not attributable entirely to socioeconomic differentials in the two populations. This is indicated by the following:

1. The rate in HIP remains lower than in the city when the comparison is restricted to patients of private physicians and differences between the two populations in age of mother and ethnic composition are eliminated.
2. The HIP-New York City differential in

[24] Ibid. footnote No. 14.

[25] In this comparison, the expected number of cases was obtained by applying perinatal mortality rates in specific proprietary hospitals and nonward cases in voluntary hospitals to the number of HIP deliveries in each of these hospitals. Perinatal mortality was defined in the series of data (available on a 100 per cent basis) as infant deaths in the first seven days after birth and fetal deaths of 28 weeks gestation or more. A similar definition was used for HIP. New York City rates in 1956 were used because of the availability of information specifically for admissions by private physicians in voluntary hospitals. This type of data had not been tabulated for the study year 1955. However, the over-all perinatal mortality rate in New York City was slightly less in 1956 than in 1955.

Chances are less than one in 100 that the difference between expected and observed numbers of perinatal deaths is due to random factors.

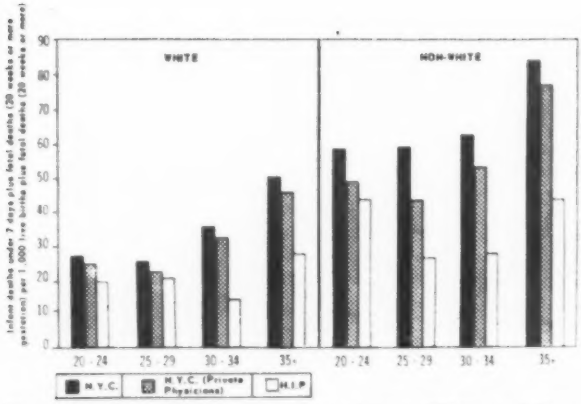



**Figure 2—Perinatal Mortality Rates Among White and Non-white Deliveries, by Age of Mother, New York City and HIP, 1955**

mortality is not affected when differences between HIP and New York City private physicians in the hospitals they use for deliveries are taken into account. This type of standardization controls for the association that may occur between hospitals and the socioeconomic class of women admitted as patients of private doctors.

3. The perinatal mortality rate for white births in HIP was lower than the corresponding rates for two groups of health areas in the city with high median incomes (1950 Census). The lowest rate in Figure 3 for a set of New York City high-income areas was 27.6 as compared with 20.5 in HIP. The margin was about the same when the age-adjusted rate in HIP (20.8) was used for the comparisons.

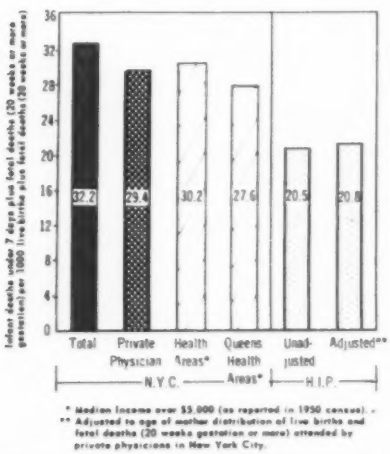



**Figure 3—Perinatal Mortality Rates Among White Deliveries, New York City and HIP, 1955**

## Summary and Discussion

This study is concerned with the pregnancy experience of enrollees in the Health Insurance Plan of Greater New York (HIP), a prepaid group practice comprehensive medical care plan, as compared with that of the general population of the city. The principle findings are:

### Prenatal Care

On an over-all basis it appears that a higher proportion of women in HIP who had a baby in 1955 began their prenatal care in the first trimester (67 per cent) than was true of women in New York City (47 per cent). However, confining the comparison to the women delivered by private physicians shows that in both HIP and the city about two-thirds of the women started

prenatal care during the first trimester. The private patient figures were 67 per cent for white women in the two study groups; 55 and 49 per cent for nonwhite women in HIP and New York City, respectively, and 48 and 41 per cent for Puerto Rican women in HIP and New York City, respectively.

#### Prematurity

The prematurity rates, after adjustment to take account of differences in the age of mother, were lower in HIP than in New York City. This was true for both the white and nonwhite groups. Restricting the New York City group to women delivered by private physicians, the New York City rates were 7.7 per 100 live births for whites and 11.4 for nonwhites, as compared with 6.9 and 10.8 in HIP. The rates for the white and nonwhite groups combined were 7.8 for New York City private patients and 7.0 for HIP.

#### Perinatal Mortality

The perinatal mortality rate for New York City was 38.1 per 1,000 live births and fetal deaths in 1955. The corresponding figure for HIP, after adjustment to take account of differences in age and ethnic group of the HIP mothers, was 23.9. The lower rate in HIP persisted when comparison was limited to the New York City private births, the figures now being 30.1 for New York City and 21.3 for HIP. Among the white private births in New York City the perinatal mortality rate was 29.4 per 1,000 live births and fetal deaths, as contrasted with 20.8 for HIP. A larger difference occurred in the nonwhite group, the New York City rate among those delivered by private physicians being 53.0 and the HIP rate being 35.6.

This, then, is the comparative picture, but a question of major importance remains. Are the HIP-New York City differentials in pregnancy loss attributable to population characteristics not yet identified or are they due to the variation in the medical care settings of the two populations? Thus far attention has been focused on indirect indicators of socioeconomic status (i.e., provision of medical care by private physicians and residence in high-income areas). The findings suggest that the lower perinatal mortality rate in HIP is not explained alone by socioecomonic differentials. A more direct measure can be obtained by returning to the individual live birth and fetal death certificates and classifying entries of "occupation of father" on these records into broad socioeconomic groupings. This type of information would have the additional value of clarifying the meaning of the private patient comparisons in prenatal care and prematurity as well as in perinatal mortality.

Useful as measures of socioeconomic status are, they cannot, however, be expected to reflect the entire range of nonmedical factors which influence the course of a pregnancy. An inquiry into various population characteristics as a possible source of the HIP-New York City perinatal mortality differentials would eventually have to consider the role of other social (including attitudinal and behavioral) attributes of the two groups.

With regard to investigations related to variations in the medical care settings, a starting point might well be to determine whether the HIP-New York City differential in perinatal mortality is affected importantly by the greater availability of diplomates in obstetrics-gynecology in HIP than in the city generally.[26] If it is found that HIP's lower perinatal loss is not explained to any

[26] Private physicians can be identified by returning to the vital records and their board membership determined from the New York State Medical Directory.

significant degree by the more frequent use of diplomates, exploration of other elements in the medical care settings would be necessary. This might suggest, for example, an inquiry into pediatric services during early infancy both in HIP and in the city as a whole, or for a study of the management of pregnancy under group practice of medicine in HIP and under solo practice in the general community.[27] If, however, the lower perinatal mortality rate in HIP is primarily a function of the extent to which diplomates are used, this has great significance for community maternal and child health programs.

[27] This can be explored to some extent on the basis of medical information on the vital records. At least one additional year's data are required for this purpose and plans have been made to obtain such additional data.

## Appendix

### Detailed Methodology

A basic consideration in the conduct of the study was the need to obtain data for both HIP and New York City births in the same degree of detail and quality. All tabulations have, therefore, been based on punched cards routinely prepared by the New York City Health Department from the official records of birth, death, and fetal death.

The HIP study group consists of all deliveries in the HIP population during 1955 that were taken care of by HIP doctors. The New York City group consists of a 10 per cent sample of live births, a 20 per cent sample of fetal deaths, and 100 per cent of the infant deaths. Included are births and fetal deaths in 1955 and infant deaths in 1955 and 1956 among the 1955 births. The study is restricted to deliveries and deaths in New York City among residents of the city for both the HIP and New York City groups.

Steps involved in identifying the vital events in HIP and locating the corresponding punched cards prepared by the Health Department follow:

1. Live births and fetal deaths in 1955 were located by searching routine reports of services to HIP patients received monthly from all HIP doctors. In addition to identifying the patient, the report form indicates when the service was received, the type of service, and the diagnosis. Entries of live birth, delivery, stillbirth, miscarriage, D & C, incomplete abortion, and so forth, were used to screen for live births and fetal deaths.

2. Live birth and fetal death certificates on file in the New York City Health Department for HIP deliveries were identified through a search of the routine indexes prepared by the department. Certificates were checked when there was doubt about the match.

3. Statistical punched cards containing data routinely processed by the Health Department from the vital records were located for HIP live births and fetal deaths by means of certificate numbers determined through step (2) above.

Infant deaths among HIP live births were identified by matching HIP deliveries against a file of punched cards for all infant deaths maintained by the city.

4. Statistical punched cards were then prepared for HIP live births, fetal deaths, and infant deaths from the matching cards in the Health Department. Accordingly, the data for HIP came from the same source documents and were coded in the same way as for the city as a whole.

### Accuracy of Identification of HIP Deliveries

Live Births—By the end of the birth index search certificate numbers were found for 99.9 per cent of the live births identified as such on the HIP physicians' report forms. Through an independent source of information [1] about a sample of deliveries by HIP doctors in 1955 it was determined that the HIP report forms themselves were about 96 per cent complete, i.e., in 4 per cent of the cases the delivery was not recorded on the forms. To determine whether the failure to report the delivery was associated with death immediately after delivery the unreported cases (25 in the sample) were checked against the vital records in the Health Department. It was found that none of the infants died during infancy.

[1] The source was a study of hospital admissions among subscribers and their dependents enrolled in HIP through accounts in the municipal departments of New York City. Hospitalizations in this study were located through a search of Blue Cross records.

Densen, Paul M.; Balamuth, Eve; and Shapiro, Sam. Prepaid Medical Care and Hospital Utilization. New York: Health Insurance Plan of Greater New York, Monograph Series, American Hospital Association. (Mimeo.)

**Table A—Live Births, Neonatal and Fetal Deaths by Ethnic Group, New York City and HIP, 1955 (Single and Plural Births Combined)**

| Ethnic Group | Live Births | Infant Deaths | | Fetal Deaths | |
|---|---|---|---|---|---|
| | | Under 28 Days | Under 7 Days | 20 Weeks Gestation or More | 28 Weeks Gestation or More |
| | | New York City * | | | |
| Total | 150,880 | 3,025 | 2,731 | 3,490 | 2,230 |
| White | 105,600 | 1,723 | 1,550 | 1,935 | 1,325 |
| Nonwhite | 26,770 | 831 | 747 | 1,040 | 570 |
| Puerto Rican | 18,510 | 471 | 434 | 515 | 335 |
| Private Physician | | | | | |
| Total † | 91,610 | 1,376 | 1,235 | 1,560 | 1,070 |
| White | 87,780 | 1,291 | 1,161 | 1,450 | 1,015 |
| Nonwhite | 2,930 | 70 | 60 | 95 | 50 |
| | | HIP ‡ | | | |
| Total † | 5,511 | 64 | 54 | 73 | 51 |
| White | 4,857 | 51 | 43 | 58 | 42 |
| Nonwhite | 575 | 11 | 9 | 12 | 6 |

* Live births based on a 10 per cent sample; infant deaths based on 100 per cent counts; fetal deaths based on a 20 per cent sample.

† Includes Puerto Rican live births, infant deaths, and fetal deaths.

‡ Based on 100 per cent counts.

Fetal Deaths—For purposes of this study the group of fetal deaths that was of primary interest consisted of fetal deaths of 20 weeks or more gestation. One of the accuracy checks carried out was directed at measuring the extent to which fetal death certificates could be found for this category of fetal deaths reported in HIP.

In connection with this a problem was posed by the fact that the listings of physicians' services in HIP, which were screened for entries regarding fetal deaths, usually do not give period of gestation. In those cases where the entry matched a fetal death listed in the Health Department index gestational age was obtained from the statistical punched card already prepared. To determine which of the unmatched entries referred to fetal deaths of 20 weeks or more gestation it was necessary to check the medical charts in HIP. This was done for a sample of the entries "D & C," "spontaneous abortion," and "incomplete abortion." The review indicated that none of these entries referred to pregnancies that had advanced to the 20th week gestation. It was assumed that all references to "stillbirth," "fetal death," and "late abortion" concerned fetal deaths of at least 20 weeks gestation.

On the basis of the preceding it became possible to estimate the proportion of total fetal deaths of 20 weeks or more gestation in HIP for which fetal death certificates could be identified. This turned out to be 90 per cent. The degree of "underreporting" indicated by the complement of this figure is not surprising. In a study of the general situation in New York City in 1944 it was found that certificates were not filed for 14 per cent of the third trimester and for 34 per cent of the second trimester fetal deaths.[2] Although it may be assumed that improvement has occurred since then, the 10 per cent figure of underreporting in the HIP study groups does not appear to be unusually high. It may, in fact, be low. For purposes of this study, however, the most reasonable assumption is that the HIP and the New York City groups of fetal deaths of 20 weeks or more gestation have about the same degree of underreporting.

[2] Baumgartner, Leona, et al. The Inadequacy of Routine Reporting of Fetal Deaths. A.J.P.H. 39, 12:1549–1552 (Dec.), 1949.

**Table B—Live Births, Neonatal and Fetal Deaths by Ethnic Group, Single Births in New York City and HIP, 1955**

| Ethnic Group | Live Births | Infant Deaths | | Fetal Deaths | |
|---|---|---|---|---|---|
| | | Under 28 Days | Under 7 Days | 20 Weeks Gestation or More | 28 Weeks Gestation or More |
| | | New York City * | | | |
| Total | 147,410 | 2,703 | 2,424 | 3,230 | 2,080 |
| White | 103,210 | 1,527 | 1,364 | 1,785 | 1,230 |
| Nonwhite | 26,140 | 752 | 671 | 990 | 555 |
| Puerto Rican | 18,060 | 424 | 389 | 455 | 295 |
| Private Physician | | | | | |
| Total † | 89,490 | 1,214 | 1,078 | 1,445 | 990 |
| White | 85,730 | 1,139 | 1,014 | 1,340 | 935 |
| Nonwhite | 2,890 | 62 | 52 | 90 | 50 |
| | | HIP ‡ | | | |
| Total † | 5,401 | 57 | 47 | 72 | 51 |
| White | 4,761 | 46 | 38 | 58 | 42 |
| Nonwhite | 4,561 | 9 | 7 | 11 | 6 |

* Live births based on a 10 per cent sample; infant deaths based on 100 per cent counts; fetal deaths based on a 20 per cent sample.

† Includes Puerto Rican live births, infant deaths, and fetal deaths.

‡ Based on 100 per cent counts.

Failure to record a fetal death on the physician's report form in HIP occurred about as often as was noted for live births (5 per cent). Accordingly, errors of this type do not affect HIP's fetal death ratios, since they occur to the same extent in both the numerator and denominator. The perinatal rates, however, may be understated by about 3 per cent because of this factor.

### Study of Possible Bias Resulting from HIP Enrollees' Use of Obstetricians Not in HIP

As mentioned earlier the HIP study group consists of deliveries by doctors in the plan. However, some women in HIP use obstetricians not associated with the plan and it is important to establish whether this selectivity is correlated with conditions that may affect the pregnancy outcome.

This issue has been examined on the basis of a random sample of births to 264 women enrolled in HIP who were delivered in 1955 by physicians not in HIP. The observed number of perinatal deaths in this group was seven. The expected number based on the age of mother and ethnic group rates in HIP was 5.62; the expected number based on age and ethnic rates in New York City (private physician) was 8.42. Accordingly, the perinatal mortality experience among the 264 women appears to fall between HIP and New York City (private physician).

Two other factors bearing on the issue of possible bias have been studied. These are history of prior fetal loss and changes in source of obstetrical care. With regard to the first point, entries on the vital records show that about the same proportion of the 264 women had a fetal death prior to this pregnancy as was true for women who were delivered by HIP obstetricians. The proportions were 21 and 20 per cent, respectively. Also similar percentages of the women were multiparous (78 and 73 per cent, respectively).

The source of prenatal care would be a significant factor if women who went outside the plan for their obstetrical care had started prenatal care in HIP and changed doctors because of pregnancy complications. An ex-

amination of reports of physician services in HIP for a subsample of the women delivered by an obstetrician not in HIP indicates that this is rarely the situation. Out of a group of 123 women, 101 did not see an obstetrician in HIP at all, 14 saw him once, and only seven saw an HIP obstetrician two or more times during the pregnancy.

It seems clear from the above that in this study the rates for HIP are not influenced to any important degree by the fact that some enrollees use obstetricians outside the plan.

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Mr. Shapiro is assistant director and Dr. Densen is director, Division of Research and Statistics, Health Insurance Plan of Greater New York. Mr. Weiner is chief statistician, Bureau of Records and Statistics, Department of Health, New York, N. Y.

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## Another Fluoridation Endorsement

Following the lead of the American Medical Association which last December strengthened its approval of fluoridating public water supplies as a means of preventing dental caries, the New York State Medical Society took similar action in January. The policy-making council of the Society concluded "after careful consideration" that "beyond any reasonable doubt water fluoridation is an effective and safe procedure for preventing tooth decay." This decision was conveyed to Mayor Wagner by a delegation of officials of the state society. In the meantime, the Public Health Service reports that nearly 33,000,000 persons now have the benefit of artificially fluoridated water supplies, in addition to the nearly 4,000,000 with the advantage of a naturally fluoridated water supply.

*Several studies have shown that medical care facilities and services available without financial barriers may still not be as fully utilized as necessary. Brightman and his co-workers examine various facets of this problem among welfare recipients in Syracuse. A second and concluding section of this study will appear in an early issue.*

# KNOWLEDGE AND UTILIZATION OF HEALTH RESOURCES BY PUBLIC ASSISTANCE RECIPIENTS

## I. Public Health and Preventive Medical Resources

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DURING THE summer of 1955 a study was made in Syracuse, N. Y., to ascertain the extent to which recipients of public assistance utilize health services available to them and to compare their utilization with that of other socioeconomic groups. An attempt was also made to determine whether the health education technics utilized by voluntary and official community health agencies reach public welfare recipients to the same extent as other population groups, or whether an intensification of or change in these technics is indicated.

The project was a joint undertaking of the New York State Departments of Social Welfare and of Health, the State University College of Medicine at Syracuse, the Syracuse City Department of Health, and the Onondaga County Department of Public Welfare.

This report will describe the methodology and present the findings concerning the knowledge and utilization of public preventive medical services. A second report will describe the findings relative to therapeutic services.*

### Methodology

#### The Community

Syracuse was selected for this study for the following reasons:

1. It is a medium-sized city (population of about 250,000) with well organized community services. The community is interested in health and welfare problems,† has contributed much in social planning, and could be counted upon for support and cooperation.

2. The State University College of Medicine at Syracuse is strongly interested in projects of this type and had a steadily developing Department of Preventive Medicine with staff mem-

* II. Reported Illness and Therapeutic Services. (To be published in the A.J.P.H. (Mar.), 1958.)

† Winslow, C.-E. A. A City Set on a Hill. New York: Doubleday, Doran and Co., 1934.

bers who could make significant contributions.

3. The State Department of Social Welfare has as director of its Syracuse Area Office, a former executive secretary of the local Council of Social Agencies, thoroughly familiar with the community's health and welfare facilities.

4. The Onondaga County commissioner of public welfare has long been cognizant of the significance of the welfare medical program and had recently appointed a public health trained physician as his full-time medical director.

### The Study Group

Basic Study Group—It seemed most desirable to select families that included children and who had been receiving public assistance for a sufficiently long and continuous period so that their pattern of living at that economic level was fairly well stabilized. It was also desired that the basic study group include mainly families with children. Families in the Aid to Dependent Children category met the needs most satisfactorily. The basic qualification was that the families were known to the Onondaga County Department of Welfare throughout the 12 months of the study and had received a public assistance grant during at least eight of those months.

First Comparative Group—The first comparative group was also chosen at a low economic level, but with sufficient resources to make them ineligible for public assistance. This would permit a comparison of the utilization of health resources by low-income families that pay for such services out of their own income (if not available without personal charge) with that by the ADC families, for whom medical care is provided as part of public assistance. For this purpose, nonwelfare family groups residing in a low-income housing project were considered to form an acceptable study group.

Second Comparative Group—It was also considered desirable to compare the knowledge and utilization of health services by the public assistance group with a group of families at a significantly higher economic level. Theoretically, it would have been desirable to make such a comparison with the population at large. However, this would have involved a difficult sampling problem and it was decided to concentrate upon one element of the general population, recognizing that any findings and conclusions refer to that element only.

For this purpose, families of employees of a single large industry were chosen, with income ranges of $5,000–$7,500 per year. These employees cannot be considered typical of the middle-income group of the general population because they were practically all covered by a medical insurance plan offered through the company. However, this group did permit a comparison of health service utilization by a middle-income group having much of its medical services paid for in part by a third party and the public assistance group which also received medical services through third party (welfare) payments.

### Method of Data Collection

Information concerning all members of the selected households was obtained by a personal interview with the homemakers or other qualified respondents at their homes, using prepared schedules. Female homemakers served as respondents in 84 per cent, or more, of each of these groups. The use of health services was recorded for the 12-month period from July 1, 1954, through June 30, 1955, except for certain maternity services for which a five-year period with the same termination date was utilized.

To analyze the relationship between the availability of health facilities, and the knowledge and utilization of these services, a complete inventory of health

facilities in the county was established.

The field work, consisting of direct household interviews with the families of the basic and comparative groups, was conducted by a group of 14 medical students from the State University College of Medicine at Syracuse who had completed their second or third academic year.

## Characteristics of the Sample

The survey covered 856 households comprised of 3,651 persons. As shown in Table 1 there were 323 households in the Aid to Dependent Children group, 315 in the Low-Rent Housing group, and 218 in the Industrial Middle-Income group. These groups will be referred to as ADC, LRH, and IMI, respectively.

The average size of the household was almost identical in each group, being 4.2, 4.3, and 4.3 respectively. However, by the very nature of the public assistance group which they comprise, all of the ADC households had children, compared to 85 per cent for the LRH, and 93 per cent for the IMI groups. Also, ADC had a high proportion of households (81 per cent) with only one parent present (almost always the female), compared to 26 per cent for LRH and 2 per cent for IMI.

The period of residence of the households in Onondaga County as a whole and in their present home was determined. The findings indicate considerable residential stability among the families in all three groups. The great majority of households in each group (85–90 per cent) had been in Onondaga County five years, or more, long enough to have become familiar with community health resources and in the present households long enough (63–88 per cent one year, or more) to know what services and health personnel were available in their immediate neighborhood. This stability factor is important in considering the reported knowledge and use of community health services.

As might be expected, there were considerable differences in the educational attainments of the adult members of the three groups. As seen in Table 2, 43 per cent of the ADC adults com-

**Table 1—Composition of the Sample**

| Item | ADC | LRH | IMI |
|---|---|---|---|
| Total number of households | 323 | 315 | 218 |
| Total number of persons | 1,368 | 1,349 | 937 |
| Average number of persons per household | 4.2 | 4.3 | 4.3 |
| Households having children, as per cent of total households | 100 | 85 | 93 |
| Preschool-age children | 53 | 54 | 51 |
| School-age children | 81 | 63 | 75 |
| Households having parents present, as per cent of households having children | | | |
| Both parents | 16 | 74 | 98 |
| One parent | 81 | 26 | 2 |
| None | 3 | 0 | 0 |
| Children, as per cent of total persons | 65 | 54 | 47 |
| Preschool age | 21 | 24 | 18 |
| School age | 44 | 30 | 29 |

Note: Abbreviations in this and subsequent tables: ADC—Aid to Dependent Children group; LRH—Low-rent housing group; and IMI—Industrial middle-income group.

**Table 2—Educational Attainment of Adults in Sample, Percentage Distribution in Respective Survey Groups**

| Years of School | ADC | LRH | IMI |
|---|---|---|---|
| Total adults, age 18 years and over | 463 | 608 | 501 |
| Total | 100 | 100 | 100 |
| Completed 8 years of school or less | 43 | 30 | 15 |
| Completed 9–11 years of school | 32 | 36 | 18 |
| Completed 12 years of school or more | 18 | 27 | 64 |
| Unknown | 7 | 7 | 3 |

pleted only eight years of school or less. This compared with 30 per cent for LRH, and 15 per cent for IMI adults.

## Findings

### Sources of Health Information

An attempt was made to determine the sources from which the surveyed households obtained health information, such as knowledge of good health practices, signs of illness, prevention of disease and common self-care. The respondent was asked which sources of health information were most helpful, rather than the frequency with which such sources were used. Advice from a physician, nurse, or other person re-

**Table 3—Sources of Health Information, Percentage of Households in Respective Survey Groups***

| Source | ADC | LRH | IMI |
|---|---|---|---|
| Physicians and nurses | | | |
| Private physician | 36 | 76 | 87 |
| Clinic physician or nurse | 83 | 59 | 16 |
| Industrial physician or nurse | 5 | 13 | 52 |
| School physician or nurse | 38 | 36 | 30 |
| Public health or visitng nurse | 64 | 59 | 33 |
| Other persons | | | |
| Druggist | 52 | 56 | 50 |
| Welfare caseworker | 55 | 5 | 1 |
| Clergyman | 18 | 17 | 12 |
| Mother | 33 | 38 | 33 |
| Other relative, neighbor, or friend | 50 | 53 | 46 |
| Group meetings or lectures | 15 | 16 | 24 |
| Nonpersonal | | | |
| Newspapers | 65 | 67 | 82 |
| Magazine articles | 50 | 57 | 77 |
| Books | 44 | 43 | 59 |
| Pamphlets and bulletins, including advertising materials | 35 | 49 | 53 |
| Radio and television | 72 | 67 | 70 |
| Health films | 26 | 27 | 26 |

* Columns add up to more than 100 per cent due to multiple sources of health information.

garding treatment of a specific illness occurring in a family member was excluded.

In Table 3 it is evident that households in each of the survey groups relied on physicians and nurses to a considerable extent for health information, although there were expected variations in the types of physicians and nurses to which each group had access.

There was remarkable uniformity among the three groups regarding other persons from whom information was obtained. An obvious exception was the high frequency with which welfare caseworkers provided information to the ADC households. In the light of this finding the question may be raised whether the welfare caseworkers are adequately trained to give such information.

With regard to health information obtained through various nonpersonal media, the IMI group relied more on newspapers, magazines, and books and to a lesser extent on pamphlets and bulletins, than did the lower income groups. Nevertheless, even though the former media were used less by ADC and LRH families they still constituted important sources of information for these groups. Of particular interest is the considerable emphasis given by all three groups to the receipt of health information by radio and television. It appears that these are excellent media which should be further exploited.

Questions were also asked about health education literature obtained from various sources. Advertising materials related to fund-raising campaigns for voluntary health agencies or to the selling of health or life insurance policies were not considered.

From Table 4 it is evident that organized health services placed health literature in a significant percentage of ADC and LRH households, but in a very small proportion of the IMI households. The schools and PTA groups distributed materials to high percentages of both the ADC and IMI households, but for some unknown reason to a much smaller percentage of LRH households.

Of particular significance was the failure of the Welfare Department to utilize health education literature, especially when considering the extent to which the caseworkers are mentioned by ADC households as sources of health information. This would seem to indicate that, in addition to inservice train-

**Table 4—Sources of Nonadvertising Health Education Literature, Percentage of Households in Respective Survey Groups***

| Item | ADC | LRH | IMI |
|---|---|---|---|
| Households receiving literature, as per cent of total households | 29 | 37 | 33 |
| Distribution by source | | | |
| Total * | 100 | 100 | 100 |
| Private physicians | 9 | 5 | 8 |
| Organized health and medical services (Health Department, hospital, clinic, or visiting nurses) | 39 | 46 | 12 |
| School or PTA | 39 | 22 | 48 |
| Employer | 3 | 3 | 16 |
| Welfare Department | 1 | 0 | 0 |
| Other or unknown | 20 | 24 | 23 |

* Columns may add up to more than 100 per cent because several households received literature from more than one source.

ing of caseworkers regarding health problems of recipients, some orientation to health education might be provided to assist them in giving correct advice.

As expected, the IMI households were the only group to receive any health literature from the employer. However, the percentage is relatively small (16 per cent) and apparently more could be done in this regard.

The insignificant distribution of health literature by private physicians among all three groups was particularly noteworthy.

### Knowledge and Reported Utilization of School Health Services

An attempt was made to ascertain the extent of knowledge regarding school health services available to the children of the household and the receipt or utilization of these services. (Questions in this section were limited to families with children currently attending school.) Specific questions were asked concerning the following items:

1. Examination by a physician
2. First aid
3. Home visits by nurses
4. Individual health advice
5. Class instruction in health
6. Vision tests
7. Hearing tests
8. Dental hygiene
9. Speech correction
10. Child guidance

There were essentially no differences among the three survey groups. The average number of services known to the three groups varied from 6.3 to 6.6, and the average number utilized from 4.7 to 5.0.

Table 5 presents data on the four types of school health services most frequently used, from the viewpoint of follow-up of recommendations. Physicians' examinations and vision tests were recommended less frequently for

**Table 5—Receipt of School Health Services, Percentage Distribution by Respective Survey Groups**

| Item | ADC | LRH | IMI |
|---|---|---|---|
| Total children in school | 606 | 411 | 275 |
| Examined by a physician | | | |
| Percentage examined | 91 | 89 | 84 |
| Percentage of examinees receiving recommendation | 15 | 17 | 10 |
| Percentage of recommendations followed | 51 | 56 | 64 |
| Vision tests | | | |
| Percentage examined | 85 | 86 | 86 |
| Percentage of examinees receiving recommendation | 11 | 8 | 2 |
| Percentage of recommendations followed | 69 | 63 | 100 |
| Hearing tests | | | |
| Percentage examined | 77 | 83 | 84 |
| Percentage of examinees receiving recommendation | 2 | 3 | 1 |
| Percentage of recommendations followed | 67 | 80 | 100 |
| Dental hygiene examination | | | |
| Percentage examined | 85 | 88 | 87 |
| Percentage of examinees receiving recommendations | 32 | 35 | 32 |
| Percentage of recommendations followed | 69 | 61 | 78 |

the IMI children than for the ADC and LRH children, but a higher percentage of recommendations were followed when made. However, the figures are rather small. Recommendations for treatment following dental examinations, were made fairly uniformly among the three groups, with about one-third of each group receiving such recommendations. While it might have been expected that more dental problems would have been found in the ADC and LRH groups, it must be remembered that these recommendations refer to needed services, whether for one small dental cavity or a completely carious mouth. No information was obtained regarding the extent of the needed service.

Despite the small size of the figures, it does appear that the extent to which medical and dental recommendations were followed leaves much to be desired in each survey group, although the IMI group did somewhat better than the others. More follow-up by school health nurses would seem to be in order.

#### Knowledge and Reported Utilization of Community Health Facilities and Services

Inquiry was made regarding knowledge and reported utilization of community health services. Regarding knowledge the findings, briefly, are as follows:

1. At least 99 per cent of the persons in each group were familiar with the hospitals nearest their homes.

2. Concerning such services as immunization, maternity, chest, well baby, dental, and psychiatric clinics, designed primarily for low-income groups, knowledge was considerably higher in the ADC and LRH groups than for the IMI group.

3. For other services intended for the entire population, regardless of financial status, such as nursing services, orthopedic clinics, heart or rheumatic fever clinics, the speech and hearing center, the child guidance clinic, and Alcoholics Anonymous, there was little difference in the frequency of knowledge among the three survey groups.

Table 6 presents the reported utilization of the four services, excluding hospitals, used most frequently by the three groups. Utilization of the remaining services was not sufficiently great among the three groups to warrant tabulation and comparison. Immunization clinics and child health conferences are used fairly frequently by ADC and LRH households but very little by IMI. Although the health department orthopedic clinics are designed to serve all elements of the population, the data indicate more frequent utilization by ADC families than by the other two groups.

On the other hand, chest x-rays for routine case finding were reported for 91 per cent of IMI households, but for only 27 per cent of ADC and 38 per cent of LRH groups. The high figure for IMI households is undoubtedly related to the fact that the adult males are included in the industrial case-finding program. These findings indicate that the Syracuse mass chest x-ray programs do not adequately reach adults in either the ADC or LRH groups.

To determine the extent to which the children of the three survey groups obtained immunizations and child health supervision during the year, regardless of source, information on services received from private physicians, pediatric clinics, and health department immunization clinics was pooled. Table 7 indicates that immunization services were obtained approximately equally by the children of the three survey groups. It should be emphasized here that if the data had been limited to infants, rather than applying to all preschool children, the figures for all groups would have been relatively higher.

The data on child health supervision in this table are based upon the percentage of all children in the respective survey groups. The data indicate a higher receipt of child health supervision in IMI than in ADC families, with the LRH group falling between them. These

**Table 6—Utilization of Selected Community Health Services, Percentage of Households and Persons in Respective Survey Groups**

| Item | ADC | LRH | IMI |
|---|---|---|---|
| Using immunization clinic | | | |
| Households, as per cent of those having preschool children | 41 | 39 | 5 |
| Preschool children, as per cent of all preschool children | 32 | 29 | 4 |
| Using child health conference | | | |
| Households, as per cent of those having preschool children | 31 | 39 | 4 |
| Preschool children, as per cent of all preschool children | 28 | 32 | 4 |
| Using Health Department orthopedic clinic | | | |
| Households, as per cent of those having preschool or school children | 10 | 5 | 1 |
| Children, as per cent of all preschool and school children | 4 | 2 | * |
| Using chest x-ray facility | | | |
| Households, as per cent of all households | 27 | 38 | 91 |
| Persons, as per cent of all persons | 10 | 13 | 28 |
| In mass programs, as per cent of persons x-rayed | 52 | 74 | 94 |
| By individual referral, as per cent of persons x-rayed | 51 | 26 | 8 |

* Less than half of 1 per cent.

**Table 7—Immunization and Child Health Supervision Received from All Sources**

| Item | ADC | LRH | IMI |
|---|---|---|---|
| Preschool children receiving immunization, as per cent of all preschool children in respective survey groups | | | |
| Total | 40 | 37 | 36 |
| From private physician | 5 | 5 | 30 |
| From general pediatric clinic | 3 | 3 | 2 |
| From Health Department immunization clinic | 32 | 29 | 4 |
| Children receiving child health supervision, as per cent of all children in respective survey groups | | | |
| Total | 16 | 23 | 32 |
| From private physician | 2 | 7 | 31 |
| From general pediatric clinic | 5 | 2 | .. |
| From Health Department child health conference | 9 | 14 | 1 |

**Table 8a—Utilization of Maternity Services, July, 1950–June, 1955, Time of First Examination by Physician for Last Pregnancy**

| Item | ADC | LRH | IMI |
|---|---|---|---|
| Number of women giving birth during period studied | 173 | 167 | 107 |
| Month of first examination (percentage distribution) Total | 100 | 100 | 100 |
| First three months | 46 | 62 | 91 |
| Fourth or fifth month | 31 | 26 | 8 |
| Sixth through ninth month | 21 | 11 | 1 |
| Unknown | 2 | 1 | 0 |

findings are undoubtedly related to the fact that there are differences in the age ranges within which children are ordinarily accepted for care by the three resources studied, i.e., private physicians' care for children of all ages, pediatric clinics usually accept children only up to 12 years of age, and child health conferences are usually limited to children up to six years of age. Restriction of this table to preschool children might well have resulted in more comparable figures.

### Reported Utilization of Maternity Services—July, 1950, Through June, 1955

Questions were asked concerning the utilization of maternity services during the previous five-year period in order to obtain an increased number of pregnancies for which information would be available. There were 173 women of child-bearing age in the ADC, 167 in the LRH, and 107 in the IMI groups, representing about half of the households in each group. The average number of children born to these women during the

**Table 8b—Utilization of Maternity Services, July, 1950–June, 1955, Receipt of Antepartum and Postpartum Medical Care by Mothers Bearing Children During Five-Year Period* (Percentages)**

| Item | Antepartum Care | | | Postpartum Care | | |
|---|---|---|---|---|---|---|
| | ADC | LRH | IMI | ADC | LRH | IMI |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |
| Received care in each pregnancy | 96 | 98 | 100 | 80 | 78 | 93 |
| Lacked care in one or more pregnancies | 4 | 2 | 0 | 20 | 22 | 7 |
| Received care in some but not all pregnancies | 4 | 1 | 0 | 9 | 10 | 2 |
| Received care in no pregnancy | 0 | 1 | 0 | 11 | 12 | 5 |

* Includes care rendered by either private or clinic physicians.

**Table 8c—Utilization of Maternity Services, July, 1950–June, 1955, Frequency Percentage Distribution of Physician Visits for Mothers in Last Pregnancy ***

| No. of Visits | Antepartum Care | | | Postpartum Care | | |
|---|---|---|---|---|---|---|
| | ADC | LRH | IMI | ADC | LRH | IMI |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |
| 1-3 | 7 | 2 | 0 | 89 | 86 | 82 |
| 4-6 | 16 | 11 | 3 | 8 | 12 | 17 |
| 7 or more | 77 | 87 | 97 | 3 | 2 | 1 |

* Includes both private and clinic visits.

five-year period was 1.7 for ADC, 1.9 for LRH, and 1.4 for IMI. In IMI families 64 per cent of the women had had only one delivery, contrasted to 48 per cent and 42 per cent for ADC and LRH families, respectively.

Table 8a presents the distribution of mothers by the month in which the first examination by a private or clinic physician was reported for the last pregnancy during the five-year period. There appears to be a direct relationship between the economic status of the women and the promptness with which they received antepartum care. Thus, 91 per cent of the IMI group received care during the first three months compared to 46 per cent and 62 per cent for the ADC and LRH groups, respectively. At the other end of the scale, 21 per cent of ADC did not receive care until the sixth month or later, compared to 11 per cent for LRH and only 1 per cent for IMI.

Table 8b reports the receipt of at least some medical care for all pregnancies during the five-year period. Relatively few women failed to receive any antepartum care in each of their pregnancies. On the other hand, at least one-fifth of the women in both ADC and LRH groups failed to receive postpartum care in at least one of the pregnancies during the five-year period, compared to only 7 per cent for the IMI group.

Table 8c indicates that, for the last pregnancy only, all women had at least one antepartum and one postpartum visit. However, the figures do appear to reflect a greater amount of antepartum care received by the IMI group.

**Table 8d—Reported Utilization of Maternity Services, July, 1950–June, 1955, Percentage Distribution of Home Nursing Visits in Last Pregnancy**

| No. of Visits | Antepartum Care | | | Postpartum Care | | |
|---|---|---|---|---|---|---|
| | ADC | LRH | IMI | ADC | LRH | IMI |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |
| None | 58 | 69 | 95 | 36 | 45 | 68 |
| 1-3 | 17 | 20 | 2 | 38 | 40 | 21 |
| 4-6 | 12 | 5 | 1 | 13 | 11 | 4 |
| 7 or more | 13 | 6 | 1 | 10 | 3 | 6 |
| Unknown | 0 | 0 | 1 | 3 | 1 | 1 |

Thus, only 3 per cent of IMI women reported six visits or less, compared to 23 per cent of ADC and 13 per cent of LRH women. The differences among the groups were not so great for postpartum care, with the IMI women showing just a slightly better picture.

Table 8d shows the number of home nursing visits received during the antepartum and postpartum periods for the last pregnancy only. Antepartum care visits were highest for the ADC group, next highest for LRH, and least for the IMI group. This would be expected as public health nurses would not ordinarily know of the IMI cases unless their services were specifically requested by the attending physician. As the ADC women, and to a smaller extent the LRH women, receive their services chiefly from clinics, their names would be more readily referred to the nursing services.

Regarding postpartum nursing care, again the ADC women received a greater amount of service than either of the other groups, with the IMI women reporting the least care. The differences, however, were not as marked as for the antepartum services.

## Summary and Conclusions

1. A survey was made in Syracuse during the summer of 1955 to determine the extent to which recipients of public assistance know of and utilize preventive medical and public health services available in their community and to compare the findings with similar data for other socioeconomic groups.

2. No basic differences in the receipt of health information and health literature was observed between the public assistance group and the two comparative groups. All three groups appeared to receive considerable health information directly from physicians and nurses. The middle-income group received less health literature from these sources than did the two lower income groups, which seems to indicate that private physicians do not adequately utilize this medium for health education. The public assistance recipients appeared to receive much health information, but little health literature from welfare caseworkers. Because of the frequent contact of the caseworkers with the health problems of the public assistance families, it would seem desirable to arrange inservice training for them regarding these matters. They might also be provided with health literature to assist them in giving correct advice.

The relative infrequency of receipt of health literature by the middle-income group from the employer seemed noteworthy.

Health information acquired via radio and television was reported equally by all three groups, and it appeared that these media could be further exploited.

3. There were no essential differences in the knowledge or utilization of school health services between the public assistance group and the two comparative groups.

Fewer medical recommendations were made for the middle-income group as compared with the public assistance and low-rent housing children, but a higher percentage of recommendations were followed when made. While the figures were generally small, it appeared that the need for more follow-up services by school health nurses among the lower income groups might be explored.

4. Knowledge of community health services seemed adequate among all three groups and appeared related to expected usage by each group. However, there appeared to be a definite deficiency in the extent to which community mass x-ray programs were utilized by the lower income groups.

5. No gross differences were revealed in the extent to which children of the three study groups received immunization and child health services.

6. While the public assistance women infrequently failed to receive any antepartum care, they applied for such care much later during pregnancy and made fewer visits than the two comparative groups. The proportion of women in both low-income groups failing to receive postpartum care over a five-year period was much higher than in the middle-income group. The record for postpartum care for just the last pregnancy was better, but it cannot be stated with certainty that this reflects a more favorable trend.

The low-income women received more antepartum and postpartum home nursing care than did the middle-income groups.

It appears that much educational work regarding the need for improved antepartum and postpartum care is necessary among public assistance families and should be carried out through caseworkers, schools, public health nurses, and physicians.

7. In brief, the deficiencies in knowledge and utilization of preventive health resources among the public assistance recipients appeared to be primarily in the areas of: (1) maternity services, (2) regular chest x-rays, and (3) follow-up on defects noted during school medical examinations.

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Dr. Brightman is executive director, New York State Interdepartmental Health Resources Board (at the time of study he was assistant commissioner of health for welfare medical services, New York State Department of Social Welfare); Dr. Notkin is medical director, Onondaga County (New York) Department of Public Welfare; Dr. Brumfield is commissioner of health, Westchester County, N. Y. (at the time of study he was chairman, Department of Public Health and Preventive Medicine, State University of New York College of Medicine at Syracuse); Mrs. Dorsey is medical social worker, New York State Department of Health (at the time of study she was with the New York State Department of Social Welfare); and Mr. Solomon is associate economist, New York State Department of Social Welfare, Albany, N. Y.

*A recent finding that death rates for coronary artery disease in the United States varied by state, prompted the examination of a smaller geographic unit, a part of a metropolitan community. The results are provocative.*

# A COMPARISON OF CORONARY ARTERY DISEASE (ARTERIOSCLEROTIC HEART DISEASE) DEATHS IN HEALTH AREAS OF MANHATTAN, NEW YORK CITY

*Ann P. Kent, M.D., M.P.H.; James R. McCarroll, M.D.; Morton D. Schweitzer, Ph.D.; and Harold N. Willard, M.D.*

A RECENT STATISTICAL study showed that for the United States "the death rates for arteriosclerotic heart disease are roughly twice as high in some states as in others."[1] Since the unit of study was an entire state, it is difficult to pin point possible causal relationships to explain the variations. The purpose of this paper is to report a survey of coronary artery disease (arteriosclerotic heart disease) among population groups, each comprising about 25,000 persons. Units of this size are suitable for detailed field studies in the event that significant differences in death rates could be shown to exist among them.

The units studied were the health areas in the borough of Manhattan, New York City. These consist of contiguous census tracts which, at the time their boundaries were drawn approximately thirty years ago, had an average population of 25,000. A little over twenty years ago the health areas were grouped into administrative units known as health center districts, each with an average population of 250,000. Manhattan has seven health districts totaling 39 health areas. There has been some exodus of population from this section of New York City since the health areas were first constituted, and there has also been considerable shifting of population within the borough. A good deal of variability between the census count of the different health areas has been brought about by these changes. The range in 1950, the year on which this study is based, ran from 10,000 to 40,000 as may be seen in Table 1.

## Method

Since there is no single category in the International List of Diseases and Causes of Death, 1948 revision, which comprises all deaths from coronary artery disease (arteriosclerotic heart disease), this study includes all deaths tabulated under categories 420–422. These headings include all fatalities attributable to coronary artery disease (arteriosclerotic heart disease).

Annual mortality and morbidity statistics, which are published on a health area basis by the New York City Department of Health, are classified into

**Table 1—Population of Health Areas in Manhattan, New York City, 1950**

| Size (000)* | Number of Health Areas |
|---|---|
| 10.0–14.9 | 8 |
| 15.0–19.9 | 16 |
| 20.0–24.9 | 26 |
| 25.0–29.9 | 20 |
| 30.0–34.9 | 11 |
| 35.0–39.9 | 2 |
| Total | 83 † |

Source: 1950 Census.

† Four health areas with a population below 10,000 were not included. These are islands in the East River occupied by federal, state, and municipal institutions, including a military post, a state mental institution, and municipal hospitals for chronic illness. Two other newly constituted health areas were not included as such, but did enter into the calculations as part of the areas to which they formerly belonged.

"white and nonwhite." Details of age and sex of each death are not available for the health areas but have been tabulated for Manhattan as a whole.

For purposes of comparison, therefore, the death rates from coronary artery disease (arteriosclerotic heart disease) of each health area were adjusted for age, sex, and race to the 1950 rates for the borough of Manhattan, using the indirect method of standardization with three age groups: 0–44, 45–64, and 65 and over.[2] An adjusted death rate for coronary artery disease (arteriosclerotic heart disease) was calculated for each health area based upon the average number of deaths occurring in 1949, 1950, and 1951.

Comparisons between these average adjusted rates are less subject to chance fluctuation. The census enumeration (1950) was used without adjustment in the belief that the population changes within the three years would not invalidate the results.

## Results of Analysis

### Variation of Death Rates Among Health Areas

Table 2 gives the population for each health area, the health center district in which it lies, the deaths from coronary artery disease (arteriosclerotic heart disease) in the years 1949, 1950, and 1951, and the adjusted death rate based upon a three-year average of these deaths. These rates vary from a low of 249 deaths per 100,000 (health area 7.10), to a high of 689 (health area 25.20). The median is 359 deaths per

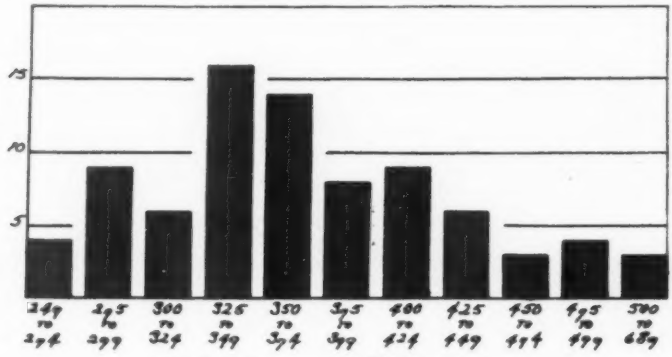


**Figure 1—Variation in Coronary Artery Disease (Ateriosclerotic Heart Disease) Death Rates in Health Areas of Manhattan, 1949–1951 (Average)**

100,000 and the quartiles are at 327 and 415. The distribution is shown in Figure 1.

From an examination of these figures it is apparent that the variation in mortality among health areas in Manhattan is as great as has been reported by Enterline and Stewart among all of the

**Table 2—Deaths and Death Rates from Coronary Artery Disease (Arteriosclerotic Heart Disease) in Manhattan Health Areas, 1949–1951**

| Health Area | Population (000) | Health Center District * | Deaths † | | | | Adjusted Death Rate per 100,000 ‡ | |
|---|---|---|---|---|---|---|---|---|
| | | | 1949 | 1950 | 1951 | Avg. | Avg. | Range |
| 1.10 | 23.2 | W.H. | 77 | 63 | 76 | 72 | 338 | 296–361 |
| 1.20 | 22.2 | W.H. | 70 | 79 | 68 | 72 | 343 | 324–377 |
| 2.10 | 28.0 | W.H. | 102 | 128 | 127 | 119 | 373 | 320–402 |
| 2.21 | 23.3 | W.H. | 73 | 74 | 72 | 73 | 298 | 294–302 |
| 2.22 | 19.1 | W.H. | 77 | 67 | 71 | 72 | 323 | 301–346 |
| 3.00 | 28.9 | W.H. | 139 | 120 | 106 | 122 | 358 | 311–405 |
| 4.00 | 32.2 | W.H. | 110 | 120 | 131 | 120 | 354 | 324–386 |
| 5.00 | 29.8 | W.H. | 113 | 143 | 116 | 124 | 362 | 330–418 |
| 6.10 | 17.6 | W.H. | 53 | 55 | 80 | 63 | 337 | 284–428 |
| 6.20 | 20.9 | W.H. | 50 | 74 | 60 | 61 | 362 | 297–439 |
| 7.10 | 15.8 | W.H. | 29 | 26 | 23 | 26 | 249 | 220–278 |
| 7.20 | 22.5 | W.H. | 40 | 45 | 52 | 46 | 340 | 296–384 |
| 8.00 | 31.2 | C.H. | 44 | 70 | 57 | 57 | 296 | 228–363 |
| 9.00 | 29.4 | W.H. | 84 | 91 | 88 | 88 | 311 | 297–322 |
| 10.00 | 28.5 | C.H. | 60 | 88 | 47 | 65 | 358 | 259–485 |
| 11.00 | 26.2 | Riv. | 58 | 59 | 61 | 59 | 381 | 375–394 |
| 12.00 | 22.7 | C.H. | 53 | 64 | 56 | 58 | 438 | 400–483 |
| 13.00 | 26.6 | C.H. | 65 | 92 | 73 | 77 | 455 | 384–543 |
| 14.00 | 20.7 | Riv. | 71 | 63 | 63 | 66 | 404 | 386–435 |
| 15.00 | 27.2 | C.H. | 56 | 58 | 51 | 55 | 382 | 354–402 |
| 16.00 | 32.9 | C.H. | 95 | 101 | 87 | 94 | 469 | 435–504 |
| 17.00 | 19.4 | E.H. | 72 | 59 | 72 | 68 | 415 | 360–439 |
| 18.00 | 32.0 | Riv. | 60 | 80 | 93 | 78 | 295 | 227–352 |
| 19.00 | 23.1 | C.H. | 56 | 56 | 39 | 50 | 416 | 325–466 |
| 20.00 | 28.8 | E.H. | 31 | 46 | 39 | 39 | 309 | 246–365 |
| 21.00 | 13.4 | E.H. | 25 | 38 | 31 | 31 | 344 | 277–421 |
| 22.00 | 21.9 | E.H. | 56 | 61 | 54 | 57 | 335 | 318–359 |
| 23.10 | 23.7 | Riv. | 98 | 150 | 117 | 122 | 355 | 285–436 |
| 23.20 | 16.8 | Riv. | 87 | 101 | 94 | 94 | 689 | 637–740 |
| 24.00 | 25.6 | C.H. | 42 | 66 | 54 | 54 | 386 | 300–472 |
| 25.00 | 27.9 | E.H. | 80 | 69 | 76 | 75 | 449 | 413–479 |
| 26.00 | 20.0 | E.H. | 38 | 39 | 48 | 42 | 253 | 228–288 |
| 27.10 | 12.5 | Riv. | 64 | 67 | 70 | 67 | 370 | 353–386 |
| 27.20 | 32.8 | Riv. | 114 | 134 | 126 | 125 | 448 | 400–470 |
| 28.00 | 25.4 | E.H. | 63 | 67 | 71 | 67 | 316 | 298–335 |
| 29.00 | 23.5 | E.H. | 60 | 60 | 77 | 66 | 337 | 306–393 |
| 30.00 | 13.6 | E.H. | 25 | 33 | 38 | 32 | 387 | 302–459 |
| 31.10 | 23.6 | Riv. | 133 | 113 | 120 | 122 | 377 | 349–411 |
| 31.20 | 25.2 | Riv. | 105 | 118 | 108 | 109 | 320 | 309–332 |
| 32.10 | 14.8 | Riv. | 52 | 45 | 55 | 51 | 320 | 283–345 |

Source: Vital Statistics by Health Areas, 1949, 1950, 1951. Department of Health, New York City.

* Health Center Districts are: C.H., Central Harlem; E.H., East Harlem; K.B., Kips Bay—Yorkville; L.E.S., Lower East Side; L.W.S., Lower West Side; Riv., Riverside; W.H., Washington Heights.

† Includes deaths listed under 420–422 International Disease Classification, 1948 Revision.

‡ Adjusted by indirect method to Manhattan borough population, 1950 census.

Table 2—(continued)

| Health Area | Population (000) | Health Center District * | Deaths † | | | | Adjusted Death Rate per 100,000 ‡ | |
|---|---|---|---|---|---|---|---|---|
| | | | 1949 | 1950 | 1951 | Avg. | Avg. | Range |
| 32.20 | 27.3 | Riv. | 104 | 116 | 93 | 104 | 347 | 310–387 |
| 33.00 | 20.0 | E.H. | 65 | 77 | 83 | 75 | 405 | 351–448 |
| 34.00 | 32.8 | Riv. | 147 | 141 | 153 | 147 | 349 | 335–364 |
| 35.00 | 35.7 | Riv. | 134 | 161 | 147 | 147 | 333 | 289–365 |
| 36.00 | 34.9 | K.B. | 108 | 132 | 118 | 119 | 262 | 238–291 |
| 37.00 | 23.8 | K.B. | 104 | 115 | 89 | 103 | 346 | 299–386 |
| 38.00 | 24.8 | K.B. | 73 | 86 | 83 | 81 | 327 | 295–347 |
| 39.00 | 24.6 | L.W.S. | 84 | 99 | 97 | 93 | 359 | 324–382 |
| 40.00 | 34.3 | L.W.S. | 152 | 176 | 151 | 160 | 359 | 339–395 |
| 41.00 | 24.2 | K.B. | 94 | 81 | 95 | 90 | 271 | 244–287 |
| 42.00 | 24.9 | K.B. | 128 | 158 | 160 | 149 | 490 | 422–520 |
| 43.00 | 18.5 | K.B. | 74 | 69 | 75 | 73 | 359 | 339–368 |
| 44.00 | 15.2 | K.B. | 72 | 53 | 51 | 59 | 330 | 285–402 |
| 45.00 | 21.0 | L.W.S. | 115 | 157 | 127 | 133 | 551 | 477–651 |
| 46.00 | 17.6 | L.W.S. | 61 | 62 | 82 | 68 | 340 | 305–410 |
| 47.00 | 37.3 | L.W.S. | 163 | 192 | 175 | 177 | 385 | 354–417 |
| 48.00 | 31.1 | K.B. | 137 | 155 | 153 | 148 | 299 | 271–314 |
| 49.00 | 21.9 | K.B. | 79 | 78 | 70 | 76 | 295 | 272–307 |
| 50.00 | 15.9 | K.B. | 50 | 69 | 66 | 62 | 320 | 258–341 |
| 52.00 | 32.0 | L.W.S. | 137 | 174 | 151 | 154 | 375 | 334–424 |
| 53.00 | 28.2 | L.E.S. | 101 | 126 | 112 | 113 | 417 | 372–465 |
| 54.00 | 16.4 | K.B. | 69 | 66 | 68 | 68 | 332 | 322–336 |
| 55.00 | 17.9 | L.W.S. | 74 | 72 | 74 | 73 | 425 | 419–431 |
| 56.00 | 29.7 | L.W.S. | 114 | 108 | 102 | 108 | 364 | 344–384 |
| 57.00 | 28.7 | L.W.S. | 101 | 119 | 108 | 109 | 288 | 267–315 |
| 58.00 | 21.7 | L.E.S. | 83 | 86 | 96 | 88 | 406 | 363–420 |
| 59.00 | 15.1 | L.E.S. | 66 | 74 | 61 | 67 | 395 | 359–436 |
| 60.00 | 32.9 | L.E.S. | 24 | 27 | 29 | 27 | 286 | 254–307 |
| 61.00 | 17.5 | L.W.S. | 58 | 57 | 45 | 53 | 297 | 252–325 |
| 62.00 | 24.2 | L.E.S. | 135 | 133 | 150 | 139 | 476 | 456–514 |
| 63.00 | 15.7 | L.E.S. | 33 | 38 | 48 | 50 | 403 | 333–484 |
| 64.00 | 20.8 | L.W.S. | 51 | 59 | 60 | 57 | 293 | 262–309 |
| 65.00 | 24.6 | L.E.S. | 144 | 172 | 155 | 157 | 485 | 445–532 |
| 66.00 | 25.3 | L.E.S. | 104 | 128 | 126 | 119 | 433 | 379–459 |
| 67.00 | 18.4 | L.E.S. | 100 | 111 | 67 | 93 | 449 | 323–536 |
| 68.00 | 26.5 | L.W.S. | 99 | 111 | 100 | 103 | 369 | 354–397 |
| 72.00 | 13.0 | L.E.S. | 59 | 61 | 77 | 66 | 460 | 412–537 |
| 73.00 | 12.9 | L.E.S. | 24 | 23 | 30 | 26 | 346 | 306–399 |
| 74.00 | 25.2 | L.E.S. | 127 | 120 | 127 | 125 | 402 | 386–408 |
| 76.00 | 12.2 | L.E.S. | 48 | 53 | 49 | 50 | 417 | 401–442 |
| 77.00 | 10.5 | L.W.S. | 68 | 61 | 56 | 62 | 483 | 437–530 |
| 78.00 | 28.2 | L.E.S. | 101 | 126 | 112 | 113 | 417 | 372–465 |
| 80.00 | 16.2 | L.E.S. | 85 | 101 | 73 | 86 | 508 | 431–597 |

Source: Vital Statistics by Health Areas, 1949, 1950, 1951. Department of Health, New York City.

* Health Center Districts are: C.H., Central Harlem; E.H., East Harlem; K.B., Kips Bay—Yorkville; L.E.S., Lower East Side; L.W.S., Lower West Side; Riv., Riverside; W.H., Washington Heights.

† Includes deaths listed under 420–422 International Disease Classification, 1948 Revision.

‡ Adjusted by indirect method to Manhattan borough population, 1950 census.

United States. Similar results were reported by Lilienfeld for Baltimore.[4]

### Consistency Within Individual Health Areas

Variation in death rates among health areas could be due entirely to chance if deaths for only one year were studied. However, taking into account probable under-reporting in 1949, the year the revised classification of the International List was introduced, the figures for the three years, 1949 through 1951, revealed a remarkable consistency. This may be seen by an inspection of the fourth, fifth, and sixth columns of Table 2, where the number of deaths for these three years are listed. When the adjusted rates are distributed in quartiles for each of the three years, the health areas are found to fall, for the most part, in the same quartile in successive years.

### Geographic Distribution

The distribution of the adjusted death rates within the borough of Manhattan is presented in Figure 2. There is a wide range of death rates within each health center district with five of the seven districts having health areas in each quartile, and the others (Washington Heights and Kips Bay-Yorkville) each including areas in three quartiles.

Thus there is no distinctive pattern

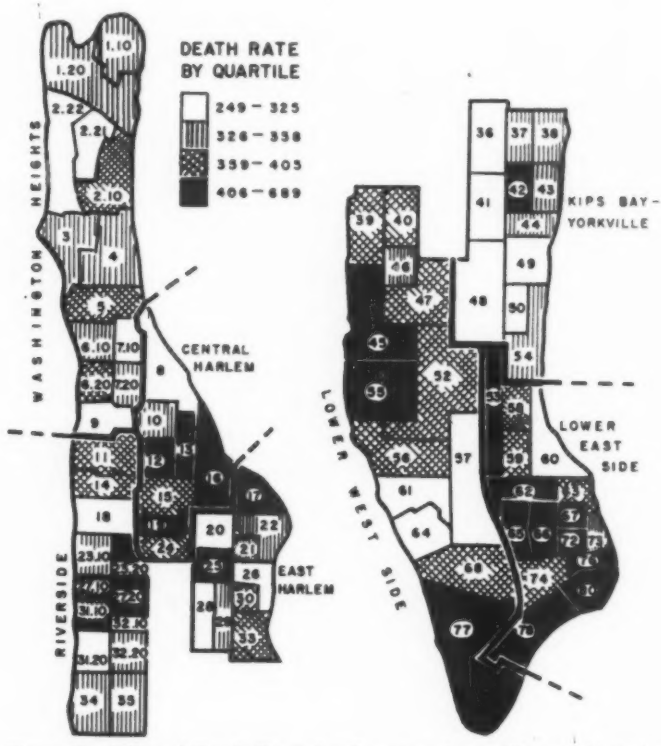


**Figure 2—Adjusted Death Rates for Coronary Artery Disease (Arteriosclerotic Heart Disease) in Manhattan, 1949–1951 (Average)**

**Table 3—Mortality in Health Center Districts of Manhattan from Coronary Artery Disease (Arteriosclerotic Heart Disease), 1949–1951 (Average)**

| Health Center District | Number of Health Areas | Mortality Above Median | | Mortality Below Median | |
|---|---|---|---|---|---|
| | | Number | Per cent | Number | Per cent |
| Lower East Side | 15 | 13 | 87 | 2 | 13 |
| Central Harlem | 8 | 6 | 75 | 2 | 25 |
| Lower West Side | 13 | 9 | 69 | 4 | 31 |
| Riverside | 13 | 6 | 46 | 7 | 54 |
| East Harlem | 10 | 4 | 40 | 6 | 60 |
| Washington Heights | 13 | 3 | 23 | 10 | 77 |
| Kips Bay-Yorkville | 11 | 1 | 9 | 10 | 91 |
| Total | 83 | 42 | 50 | 41 | 50 |

observable, although there is some tendency for clustering of health areas falling within the same quartile.

The effects of this tendency in terms of the health center district administrative units are shown in Table 3. Mortality in the Lower East Side, as reflected in adjusted death rates per 100,000, is above the median in 13 of 15 health areas and is almost equally high in Central Harlem. In Kips Bay-Yorkville and Washington Heights only a few health areas are above median mortality.

### Relationship to Income

Several demographic characteristics of the population under study were available for investigation of possible association with the adjusted health area death rates. Only one of these, median family income, will be included in this paper.

Median family income in the 83 health areas in this study was $3,024 in 1949 and the range of health area median income $1,778 to $10,000.

Quartile distribution of family income was compared to the quartile listing of adjusted death rates. It was noted that 29 (35 per cent) of the health areas showed incomes above the median and death rates below this point. Exactly the same number revealed the reverse situation. The remaining 25

**Table 4—Comparative Median Family Income in Health Center Districts of Manhattan**

| Health Center District | Number of Health Areas | Income Above Median | | Income Below Median | |
|---|---|---|---|---|---|
| | | Number | Per cent | Number | Per cent |
| Lower East Side | 15 | 3 | 20 | 12 | 80 |
| Central Harlem | 8 | 0 | 0 | 8 | 100 |
| Lower West Side | 13 | 9 | 69 | 4 | 31 |
| Riverside | 13 | 9 | 69 | 4 | 31 |
| East Harlem | 10 | 1 | 10 | 9 | 90 |
| Washington Heights | 13 | 10 | 77 | 3 | 23 |
| Kips Bay-Yorkville | 11 | 10 | 91 | 1 | 9 |
| Total | 83 | 42 | 50 | 41 | 50 |

health areas were evenly divided between a group of 12 (14 per cent) with incomes and death rates in the lower half of the scale and 13 (16 per cent) with the opposite finding. This distribution shows an inverse relationship between the median health area income and death rate from coronary artery disease (arteriosclerotic heart disease).

Table 4, showing comparative incomes in health center districts, lists these districts in the same order as they appear in Table 3.

Lower East Side and Central Harlem, most of whose health areas have incomes below the median (Table 4) have mortality above the median (Table 3). Washington Heights and Kips Bay, whose health areas have income principally above the median (Table 4) have mortality below the median. This presentation also suggests a tendency toward inverse association between income and coronary artery disease (arteriosclerotic heart disease) deaths.

## Discussion

There are apparently real geographic differences in the death rates from coronary artery disease (arteriosclerotic heart disease) in Manhattan which cannot be attributed to variations in the age, sex, or race composition of the population units investigated. No obvious reasons come to mind to explain the kind of pattern resulting from these differences. There does seem, however, to be some tendency for health areas with high death rates to be located in sections of the city known to be economically underprivileged. A reverse distribution was also observed.

When this impression was tested, area by area and for the health districts as a whole, about two-thirds of the health areas were found to show a negative association between median family income and death rate. Health areas for which this did not hold true were conspicuously congregated in East Harlem District (7 out of 10 health areas) and to a lesser extent in Lower West Side (5 out of 13 health areas), but were also to be found scattered throughout other sections of the island. One can speculate as to cultural or genetic factors which may be operating to bring about this deviation from the over-all trend of income-death relationships. There are a number of possibilities which seem to justify exploration, such as occupation, education, marital status, and ethnic background.

Before these studies are made, however, it is important to investigate a series of deaths in order to determine: (1) the extent to which the cause of death reported on the death certificate can be medically verified,[3] and (2) the relationship between an individual dying with coronary artery disease (arteriosclerotic heart disease) and the population from which he is drawn. In this way a picture can be put together of an ideal type who, in this community of Manhattan, appears to be in particular danger of succumbing to coronary artery disease (arteriosclerotic heart disease).

Studies such as the present one can go no further than to develop a frame of reference within which to evaluate experience in terms of individuals. Information of a more detailed sort could be provided by field studies of reported deaths. Such studies would be statistical studies of population groups.

## Summary

A statistical study is reported of variation in death rates from coronary artery disease (arteriosclerotic heart disease) in the various health areas of Manhattan, New York City, for the years 1949–1951.

Adjusted death rates ranged from a

low of 249 per 100,000 to a high of 689. It was found that there was little variation from year to year in the number of deaths in a given health area.

There was a tendency toward inverse association between median family income of the health areas and their death rates from coronary artery disease (arteriosclerotic heart disease).

It is suggested that these health areas, with an average population of 25,000, are convenient units for further epidemiologic investigation.

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## Worth Repeating

"The most effectual means of securing sanitary reforms [in New Orleans] is the formation of a voluntary health association which would concentrate and unite the labor of those individuals whose philanthropy would induce them to engage in the undertaking. The purpose of this association would be: first, to undertake the truth with regard to our sanitary condition; next, to inform the community upon the subject; and finally to urge those measures that might be deemed advisable."

—H. J. SIMONDS, M.D., New Orleans, 1851

*Increasingly it is recognized that the educational approach is essential in any endeavor to deal with health problems where individual action is required. An instance is the effort to utilize the group process for the control of obesity. Some of the problems and results involved are presented here.*

# A GROUP APPROACH TO WEIGHT CONTROL

*Henry J. Keneally, Jr., M.P.H.*

THE BOARD of Directors of the Oregon Heart Association decided that a program aimed at the prevention of overweight could conceivably have an important part in the reduction of morbidity and mortality from cardiovascular disease. The task of planning and conducting such a program was given to the Community Service and Public Education Committee of the Association. As program director of the Heart Association, the author was authorized to plan and administer the program.

Because the problem of obesity concerned many organizations and professions, a Weight Control Committee composed of representatives from the following disciplines was formed: medicine, including internists, a psychiatrist, and a public health officer; nursing; public health education; dietetics; nutrition; psychology; sociology; home economics; and insurance. These disciplines represented the following agencies and organizations: the State University Medical School, State Medical Society, State Health Department, State Dairy Council, hospitals, Agriculture Extension Service, Visiting Nurses Association, insurance companies, and a volunteer health agency.

One of the first tasks of the newly formed committee was to study and evaluate similar programs. After careful study it was the decision of the committee to follow the approach used at Herrick Memorial Hospital, Berkeley, Calif.[1-3]

After several meetings over a six-month period, the committee decided to conduct a pilot study first in the Portland area. It was agreed that if this study proved to have merit, the next step would be to carry the project to selected areas in the state. An outline of the project was presented to the State and County Medical Societies and approved. A committee of internists was then appointed to supervise the project.

Participants for the first group were recruited through a letter sent to all Portland physicians. The letter described in detail the proposed program and requested referral of patients to the classes. About 10 per cent of the physicians responded. From these referrals 12 participants were selected.

Selection of participants was based on the following criteria:

1. All participants were referred by a physician.
2. The caloric content of the participant's diet was prescribed by the private physician.
3. Participants were placed in groups according to body weight, not body build or amount of overweight.
4. If there were sufficient participants of a similar weight to form two or more groups,

participants with a similar educational background were placed in the same group.

With the formation of the initial group it was decided to release a newspaper item describing the proposed program and inviting the public, upon physician referral, to participate. The response was overwhelming! Within a three-day period the list of applicants numbered more than 150 and phone calls still poured in! Each applicant was sent an application form and was given an opportunity to enroll. Five additional groups were formed using the same criteria developed for the initial group. In addition to the weight of the individual, height, body build, sex, and education were used to obtain homogeneity. The number of participants in each group averaged 11. Participants in five of the groups were women and one group was composed of men. Because the number of men who applied for the program was so small, homogeneity was practically impossible. For example, the weight range of this group ran from 125 to 297 pounds; the amount of overweight, 10 to 107 pounds; the age range, from the middle 30's to 70; and the educational range, from the fourth grade of grammar school to postgraduate college degrees. With the comparatively large number of women applying it was possible to form two groups of women who averaged 241 pounds, one group averaging 197, one group 165, and one group averaging 143 pounds. An attempt was made to divide these groups by educational and economic status as well. No attempt was made to divide the participants by age.

No preorientation of the participants was attempted because the Heart Association staff was too small to permit such a procedure. Physicians whose patients were enrolled were informed by letter and asked to indicate whether or not special dietary restrictions or physical limitations were to be observed. Diets were also to be prescribed by the patient's physician.

### The Leader

The Weight-Control Planning Committee felt that the prime requisite for the group leader should be experience in group work technics. Technical knowledge and training in dietetics and nutrition were considered valuable, but not essential. Understanding of the group process, a sympathetic attitude, willingness to listen, and ability to work with people were the main qualifications. Leaders for the pilot study included a dietitian, a public health educator, a health and physical education instructor, a school health educator, and a public health nurse.

Leaders were informed that where they were not able to supply necessary medical, technical, or dietary information, specialists would be made available. Members of the Weight-Reduction Planning Committee acted as resource people upon request of the leader. In addition, monthly meetings were held where leaders had an opportunity to talk over their problems with other leaders, physicians, psychologists, and the psychiatrist.

An instruction sheet and a proposed agenda for the first two meetings were prepared and given to the leader. The committee believed that the course content and conduct of the meeting should be the responsibility of the leader, but that as little structuring as possible should be done. The leader was responsible for a narrative report of each weekly meeting, completing attendance and weight records and certain other forms and charts.

### Meetings

Considering that the physical aspects of the meeting were quite important, an attempt was made to render the meet-

ing place as private, as comfortable, and as pleasant as possible. Suggestions were made regarding the seating of participants and leader.

Whenever possible, a platform scale was made available to each group. In some cases a bath-type scale was used by the group. Actually, the "weighing in" part of the meeting became almost a ritual. The leader usually requested volunteers to act as the "weigher in." On one occasion the leader was late for her meeting and the participants were unable to get into the meeting room—phone calls were made by several of the group members "just to get into the office and weigh in."

The meetings were generally informal. However, the tenor of the meeting depended on the orientation of the group leader. Leaders who had more of a "teacher" orientation had meetings that were more structured than were those of leaders who had had more group orientation. The results achieved by participants in all groups showed no significant differences in weight loss that could be attributed to the leader's profession. However, the author and several of the leaders have wondered whether some of the participants might not have experienced greater success in a completely structured setting with straight lectures, assignments, and a teacher-student relationship instead of a permissive situation.

As stated previously, the first two meetings of the pilot group were relatively structured. Assignments were made, literature was distributed, forms and charts were filled out by participants, and a rather formal format was followed. The leaders of the pilot study and the subsequent group leaders felt that this procedure was valuable to both the leader and the participant. However, all meetings after the second were usually planned, organized, and conducted jointly by the leader and the participants.

It is interesting that even though the meetings were planned, organized, and conducted independently of one another, the same subject matter was covered in all the groups. The only major difference was the order in which the subject matter was discussed. For example, some groups requested a talk by a psychiatrist relatively early in the program; others asked for this service later.

## Results

Originally the Portland study consisted of six groups with 63 participants who had enrolled and attended at least one meeting. As stated previously, five of these groups were composed entirely of women; one group was composed of men. Unfortunately, the male group failed to complete the 16 weeks and was discontinued after about nine weeks. Several factors were responsible for this failure. The group was small and lacked the homogeneity of the women's groups. Only nine men enrolled and attended the first meeting. Age, education, economic status, and general level of interests were also widely divergent in this group. The leader, a college health and physical education director, managed to hold the interest for the first four or five meetings but, unfortunately, was called out of the city for the fifth and sixth meetings and no one conducted

**Table 1—Attendance of Participants**

| Attendance | No. | Per cent |
|---|---|---|
| Attended one or more meetings | 54 | 100 |
| Attended only one meeting | 6 | 11 |
| Attended two to three meetings | 7 | 13 |
| Attended four to seven meetings | 5 | 9 |
| Attended eight to 11 meetings | 12 | 22 |
| Attended 12 or more meetings | 24 | 45 |

**Table 2—Weight Loss Versus Attendance**

| No. of Meetings Attended | No. of Participants | Per cent | Pounds of Weight Lost or Gained | | | |
|---|---|---|---|---|---|---|
| | | | Greatest | Average | Total | Smallest |
| 0- 3 | 13 | 24 | 17.00 | 3.00 | 38.25 | 2.00 (gained) |
| 4- 7 | 5 | 9 | 20.00 | 7.50 | 37.50 | 1.75 (gained) |
| 8-11 | 12 | 22 | 24.00 | 7.00 | 85.00 | 3.00 (gained) |
| 12 or more | 24 | 45 | 35.00 | 14.30 | 343.00 | 3.50 (lost) |

the group during his absence. Because the participants were strongly dependent upon the leader, particularly during the early sessions, the leader's absence was looked upon as desertion by the great majority of his group members. When he returned he found it impossible to attain group solidarity. Only three members attended the fifth meeting, two the sixth, and only one the seventh, eighth, and ninth. The meetings were finally stopped.

This report will deal with the five groups that completed the full 16 weeks. Fifty-four participants were enrolled in these groups and attended at least one meeting. The following tables describe attendance, weight loss, and other pertinent information.

Note that 33 per cent of the total group attended less than half of the meetings while 45 per cent attended more than three-fourths of the meetings. The greatest number of drop-outs occurred after the first meeting. Possibly the participants anticipated a different experience and were disappointed in the first meeting.

Practically all participants lost weight, even those who attended less than one-fourth of the meetings. However, it was gratifying that the 45 per cent who attended three-fourths of the meetings lost an average of almost 15 pounds per person and no participant in this group gained weight.

The average weight loss of the participants under 50 years of age was considerably greater than the weight loss of the older age group. However, this is more understandable when attendance by age is observed (Table 4).

Approximately 84 per cent of the participants under 50 years of age attended more than half of the meetings, while only 51 per cent of the participants over 50 years of age attended. More than half, 56 per cent, of the under 50 group attended three-fourths of the meetings compared to 34 per cent of the over 50 group.

Six months after completion of the pilot program a questionnaire was sent to all of the participants who attended one or more meetings. The questionnaire asked only the present weight of

**Table 3—Weight Loss by Age of Participant**

| Age of Participant | No. | Average Weight Loss |
|---|---|---|
| Under 50 years of age | 25 | 11.00 lbs. per person |
| Over 50 years of age | 29 | 7.63 lbs. per person |

**Table 4—Attendance by Age of Participant**

| Over 50 Years of Age | | | Under 50 Years of Age | | |
|---|---|---|---|---|---|
| No. of Meetings | No. of Participants | Per cent | No. of Meetings | No. of Participants | Per cent |
| 0–3 | 9 | 32 | 0–3 | 3 | 12 |
| 4–7 | 5 | 17 | 4–7 | 1 | 4 |
| 8–11 | 5 | 17 | 8–11 | 7 | 28 |
| 12 or more | 10 | 34 | 12 or more | 14 | 56 |
| Total group | 29 | 100 | Total group | 25 | 100 |

the person. Table 5 gives the response to the questionnaire.

Several interesting things were noted in the response to the questionnaire. First, a high level of interest in the project was indicated by the response—over 80 per cent responded to the letter appealing for information. In addition, it was noted that the participants who had gained weight were apologetic—many added an extra sentence or two to the postcard and explained their weight gain and apologized for slipping. Many participants inquired if additional classes were to be held and wondered if there would be an opportunity for them to enroll. We assumed that the 20 per cent who failed to respond had probably gained weight and were reluctant to answer for that reason.

While the sample was quite small and no statistical significance could be attributed to the findings, it was noted that the greatest average weight loss was sustained by the participants who had attended eight to 11 meetings. These individuals had lost an average of 14 pounds each at the completion of the course. Further examination of the individual records of those participants reveals that they were the "slow starters" in the group. Plans are being made for future follow-up to bring out additional information. Questionnaires are to be sent out at three-month intervals in the future.

## Follow-Up

Unfortunately, no attempts to evaluate the program from the viewpoint of the participant were made until the conclusion of the program. Only 33 of

**Table 5—Response to Questionnaire Sent to Participants at Six-Month Interval**

| Response | No. of Participants | Per cent | Pounds Weight Lost | Average Loss | Pounds Weight Gained | Average Gain |
|---|---|---|---|---|---|---|
| No answer | 11 | 20 | 0 | 0 | 0 | 0 |
| Moved out of town | 3 | 5.5 | 0 | 0 | 0 | 0 |
| Remained at same weight | 5 | 9 | 0 | 0 | 0 | 0 |
| Gained weight | 11 | 20 | 0 | 0 | 68 | 6+ |
| Continued to lose weight | 24 | 44 | 193.25 | 8+ | 0 | 0 |

the 54 members returned the completed evaluation form.

The key question in the evaluation form was question number 2: "Do you feel that the weight reduction classes helped you? The response to this question was as follows:

| | |
|---|---|
| Very much | 15 |
| Quite a bit | 5 |
| Some | 7 |
| Very little | 4 |
| No answer | 2 |

The two participants who did not answer question 2 had attended only one class so they felt they could not justifiably answer the questionnaire. The 20 participants who answered "very much" and "quite a bit" to question 2 were, for identification, placed in Group A; and the 11 participants who answered "some" and "very little" were placed in Group B. The answers of Group A and B were as follows:

"I lost the following number of pounds":

| | Less Than 5 | 5-10 | 10-20 | More Than 20 | No Answer |
|---|---|---|---|---|---|
| Group A | 0 | 3 | 10 | 7 | |
| Group B | 5 | 1 | 3 | 1 | 1 |

Eighty-five per cent of Group A lost 10 or more pounds compared to only 36 per cent of Group B.

Question No. 1—"I attended the following number of classes":

| | Less Than 5 | 5-10 | 10-15 | More Than 15 | No Answer |
|---|---|---|---|---|---|
| Group A | 1 | 3 | 8 | 9 | |
| Group B | 5 | 1 | 3 | 1 | 1 |

Eighty-five per cent of Group A attended 10 or more classes compared to 36 per cent of Group B.

Question No. 2 (See above)

Question No. 3—"Did you form new ideas about dieting?"

| | Certainly Did | Did | Probably Did | Not at All | No Answer |
|---|---|---|---|---|---|
| Group A | 12 | 6 | 2 | 0 | |
| Group B | 0 | 1 | 4 | 5 | 1 |

Ninety per cent of Group A formed new ideas about dieting while 90 per cent of Group B did not.

Question No. 4—"Did your eating habits change as a result of the classes?"

| | Certainly Did | Did | Probably Did | Not at All | No Answer |
|---|---|---|---|---|---|
| Group A | 7 | 12 | 1 | 0 | |
| Group B | 0 | 1 | 2 | 7 | 1 |

Ninety-five per cent of Group A changed their eating habits; 90 per cent of Group B did not.

Question No. 5—"Can you now control your weight?"

| | Easily | Fairly Easy | Fair | Not at All | No Answer |
|---|---|---|---|---|---|
| Group A | 0 | 8 | 11 | 1 | |
| Group B | 2 | 0 | 4 | 3 | 2 |

Two of the participants in Group B answered that they could control their weight easily. Apparently these participants felt that they did not need any help and possibly this attitude was one of the reasons why the attendance record and drop-out record of this group was higher than Group A. Group A's responses clustered around "fair" and "fairly easy" while the majority of Group B's answers were around "fair" and "not at all."

Question No. 6—"Do you still need help to control your weight?"

| | Very Much | Quite a Bit | Some | Very Little |
|---|---|---|---|---|
| Group A | 8 | 5 | 6 | 1 |
| Group B | 7 | 1 | 2 | 1 |

Both groups indicated that they needed considerable help to answer their problems. Forty per cent of Group A indicated that they need help "very much" as compared to 64 per cent of Group B.

Question No. 7—"Are you able to follow your doctor's instructions better as a result of the course?"

| | Very Much | Quite a Bit | Some | Very Little | No Answer |
|---|---|---|---|---|---|
| Group A | 3 | 9 | 4 | 0 | 4 |
| Group B | 1 | 0 | 4 | 3 | 3 |

Sixty per cent of Group A indicated that they were now able to follow their doctor's instructions better as a result of the course, while 63 per cent of Group B indicated they got very little or no help from the course.

Question No. 8—"Has your new knowledge helped your family change eating habits?"

| | Very Much | Quite a Bit | Some | Very Little | No Answer |
|---|---|---|---|---|---|
| Group A | 2 | 4 | 7 | 6 | 1 |
| Group B | 0 | 1 | 0 | 6 | 4 |

Apparently more effort should be made to help the participants in this area as the answers of both groups indicate they have not received much help.

Question No. 9a—"I felt that the course would have been better if: It was longer?"

| | Agree Wholeheartedly | Partly Agree | Disagree Some | Disagree Wholeheartedly | No Answer |
|---|---|---|---|---|---|
| Group A | 11 | 3 | 1 | 1 | 4 |
| Group B | 3 | 3 | 0 | 1 | 4 |

Sixty-one per cent of the total group felt that the program should be longer.

Question No. 9b—"I felt that the course would have been better if: There was a different leader?"

| | Agree Wholeheartedly | Partly Agree | Disagree Some | Disagree Wholeheartedly | No Answer |
|---|---|---|---|---|---|
| Group A | 0 | 1 | 0 | 16 | 3 |
| Group B | 6 | 0 | 1 | 3 | 1 |

The questionnaire was an anonymous type and no signature was required. It was hoped that we would get candid and honest answers to our questions if no one was identified. Sixty per cent of Group B felt that the program would have been better with another leader and only 5 per cent of Group A mildly felt that the program would have been better with a new leader. Apparently this was a factor—or an excuse by the participants who felt they did not get anything from the program.

Question No. 9c—"I felt the course would have been better if: More authorities were used?"

| | Agree Wholeheartedly | Partly Agree | Disagree Some | Disagree Wholeheartedly | No Answer |
|---|---|---|---|---|---|
| Group A | 5 | 5 | 2 | 7 | 1 |
| Group B | 7 | 2 | 0 | 2 | 0 |

Eighty-two per cent of Group B felt that more authorities would have improved the program, while the response of the members of Group A was equally divided between agreement and disagreement. However, a high percentage of both groups felt that "more authorities" should be used. Perhaps this attitude is a factor in the personality of the obese individual—the need for dependence upon authority?

Question No. 9d—"I felt the course would have been better if: More materials made available?"

| | Agree Wholeheartedly | Partly Agree | Disagree Some | Disagree Wholeheartedly | No Answer |
|---|---|---|---|---|---|
| Group A | 3 | 6 | 1 | 3 | 7 |
| Group B | 5 | 2 | 0 | 1 | 3 |

This question, like question 9c, points up the need for the participant to be "told" how to lose weight. The response to question 9e points up even more the need to be "told" how to lose weight (see below).

Question No. 9e—"I felt the course would have been better if: More lectures and less discussion?"

| | Agree Wholeheartedly | Partly Agree | Disagree Some | Disagree Wholeheartedly | No Answer |
|---|---|---|---|---|---|
| Group A | 9 | 7 | 0 | 2 | 2 |
| Group B | 7 | 2 | 1 | 0 | 1 |

There is no appreciable difference between the responses of both groups to this question. However, the answers of the participants indicate that some consideration should be given to the possibility of conducting some groups entirely by lecture methods and comparing the results, e.g., weight loss, level of attendance, attitude responses, number of drop-outs, etc., with the results obtained by the more permissive group approach. Plans for groups conducted in this fashion are now in the making.

Question 9f—"I felt the course would have been better if: There were a larger meeting place?"

| | Agree Wholeheartedly | Partly Agree | Disagree Some | Disagree Wholeheartedly | No Answer |
|---|---|---|---|---|---|
| Group A | 0 | 4 | 2 | 8 | 6 |
| Group B | 1 | 1 | 0 | 6 | 3 |

Apparently the participants felt, with few exceptions, that the size of the meeting place was sufficient for their needs.

Question No. 9g—"I felt the course would have been better if: A fee had been charged for the program?"

| | Agree Wholeheartedly | Partly Agree | Disagree Some | Disagree Wholeheartedly | No Answer |
|---|---|---|---|---|---|
| Group A | 1 | 5 | 2 | 8 | 4 |
| Group B | 2 | 2 | 1 | 5 | 1 |

The response of both groups indicate that the majority of the group felt that the program should be made available to everyone and that no participant be excluded because of inability to pay.

Question No. 9h—"I felt the course would have been better if: The group had been larger?"

| | Agree Wholeheartedly | Partly Agree | Disagree Some | Disagree Wholeheartedly | No Answer |
|---|---|---|---|---|---|
| Group A | 3 | 4 | 2 | 6 | 5 |
| Group B | 4 | 3 | 0 | 3 | 1 |

The response to question 9h raised some very interesting points. It was the feeling of the committee that the ideal size group should consist of approximately 12 members. In any event, 15 members in a group were considered the maximum size for participation. Ideally, 10–15 members per group would allow maximum participation for group members but, in our experience, there was a comparatively high percentage of drop-outs after the first or second meeting. This was true in five of the six groups—one group maintained a perfect attendance record of no drop-outs. If the program were to be conducted on a very large scale and it were possible to attain homogeneity, groups of approximately 12 members would be ideal. However, if the program is conducted with a relatively small sample and no attempt is made to screen out participants, the ideal number of participants starting in a group should be 17 or 18 and the maximum number of participants admitted to a class around 20.

Question No. 9i—"I felt the course would have been better if: There was a chance to enter another group after completion?"

| | Agree Wholeheartedly | Partly Agree | Disagree Some | Disagree Wholeheartedly | No Answer |
|---|---|---|---|---|---|
| Group A | 12 | 2 | 1 | 1 | 4 |
| Group B | 4 | 5 | 0 | 1 | 1 |

Seventy-seven per cent of the total group indicated that they would like to enter another group after completion of the course. Particularly interesting was the response of Group B—82 per cent wanted the chance to join another group.

Before the groups completed their final meeting there had been evidence that the participants would like to continue. The author was invited, and attended, most of the final meetings of the groups where the common question was, "Can we continue meeting?" No plans had been made to allow for contingencies such as this. The majority of committee members felt that it was not the Heart Association's role to perpetuate the groups. In addition, the committee felt that the pilot study was intended to provide an answer to a community need, and that there were facilities and agencies in the community that could and would assist and support such a program on a long-term basis. Furthermore, there was considerable doubt in the minds of many committee members that the continuing groups should be "leader" oriented. It was our opinion that if the leadership was in the group and not outside, in the person of a professional group leader, the probability of the group continuing over an extended period was better.

To assist the groups with their request for additional meetings arrangements were made for a meeting place and all participants were notified and invited to attend a planning meeting. Representatives from three of the completed groups met with the author and one of the group leaders and discussed plans for future meetings. Unfortunately, none of the participants at the meeting cared to identify themselves or their group with the large group, and at a second meeting only three or four participants were present. Attempts for future meetings failed to materialize and the large group plan failed. However, members from three of the groups have continued to meet among themselves but not with members of other groups.

In analyzing the failure of the large group meeting several factors emerged:

1. The participants developed a very strong identification with their own group but failed to identify with (as we presumed they would) the large weight control group. In other words, they recognized themselves as members of Group A, Group B, and Group C, and so forth, of the Oregon Heart Weight Control Program but did not strongly identify themselves with the Oregon Heart Weight Control Total Group.

2. The participants in the large meeting discussed the procedures, the leader's role, the discussion at meetings, weight loss of members, and many other subjects concerning their group meetings. While discussion usually aids growth, unfortunately, this discussion tended to separate the groups still further.

3. The participants rejected the members of other groups as not having "problems" such as theirs, e.g., "I weigh 235 pounds, you weigh 145 pounds—what do you know of my problems?" Or, "You don't have the same troubles I do—my family and husband are my big problems."

Plans for future weight control groups will utilize these findings. Leaders will be instructed to turn over the leadership role as soon as possible to the group and to act as observers rather than leaders. The purpose is to allow the groups to plan and conduct the sessions and to be familiar with group meetings so as to be able to continue after completion of the course.

## Conclusions and Recommendations

The purpose of the Portland Pilot Study was to determine the following: First, whether the methods used would actually lead to weight loss among the participants and, second, to see if this approach could be used successfully on a state level.

The Portland study suggests that:

1. The average participant can lose weight successfully in a program that applies group methods.

2. The amount of weight lost by the average participant was 10 pounds.

3. The amount of weight lost by the average participant was proportionate to the number of meetings attended.

4. The age of the individual participant was a factor in both the amount of weight lost and the number of meetings attended.

5. The number of meetings should be increased to allow participants to obtain a better understanding of group methodology.

6. There is evidence that plans should be formulated for continuation of the groups, under their own leadership, after completion of the formal course.

7. The more homogeneous the group: the greater the weight loss per participant, the better the average attendance, and the fewer drop-outs of participants.

As a result of these findings, the planning committee concluded that the program had merit and the author was instructed to proceed with plans for a state-wide program of weight control that would utilize the procedures and findings of the Portland Pilot Study.

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## 1958 National Health Forum on Urban Sprawl

The 1958 National Health Forum, sponsored by the National Health Council and its 63 member agencies, will be devoted to the subject of Urban Sprawl and Health. Here regional planners, health officials, engineers, social scientists, and many others will try to project how changing health programs are needed to meet changing health needs and communities.

Abel Wolman, Dr.Eng., professor of sanitary engineering, Johns Hopkins University, and Frank C. Moore, president, Government Affairs Foundation, are co-chairmen of a 27-member citizens' committee planning the meeting scheduled for March 18–20 at the Sheraton Hotel, Philadelphia.

At the opening dinner on March 18, in which the National Advisory Committee on Local Health Departments shares sponsorship, the forum speakers will be Robert E. Meyner, Governor of New Jersey, and David E. Price, M.D., chief, Bureau of State Services, PHS.

The forum program will be devoted to a background panel, to case histories of eight cities, and to a two-session period on the impact of urban sprawl on health fields of special interest. Two luncheons are on the program—one on March 19 addressed by Luther Gulick, president, Institute of Public Administration. At the windup luncheon on Thursday, Dr. Wolman will summarize the forum and Norvin Kiefer, M.D., medical director, Equitable Life Assurance Society of the United States, as incoming president, will make the presidential address.

Further information and reservation blanks from National Health Council, 1790 Broadway, New York 19.

*Health education in its short but interesting career has been subjected to many emphases. Dr. Bowman undertook to see what those who prepare health educators, those who employ them, and what the health educators themselves have to say on the responsibilities and preparation of this group of health workers. The findings are provocative and provide much food for thought.*

# CONSISTENCIES IN THE PREPARATION AND WORK OF PUBLIC HEALTH EDUCATORS

*Robert A. Bowman, Ph.D., F.A.P.H.A.*

HEALTH EDUCATION as an essential activity of public health departments and the public health educator as a professional worker are now widely accepted in the field of public health. The public health educator has been cited as the most recent of the specialists who make up the public health team to attain professional maturity.[1] The tremendous growth in the employment of public health educators by health departments since the early 1940's has been called one of the most remarkable phenomena in the history of public health administration,[2] and the creation of a Health Education Division in the World Health Organization is looked upon as a magnificent recognition of the growth of this new field of professional service.[3]

While health education has gained increased acceptance as an important process in public health practice, no uniform concept of the requisite background, preparation, and duties of the public health educator as a professional career person has developed. Some of the disparity in the various concepts held appears to be the result of the shifting emphases in health education during its period of emergence as a specialty.

Recognition of the need for greater clarification of the role of public health educators in health agencies and for more adequate preparation of these professional workers provided incentive for this study which sought to determine the consistency of relationships between the actual and the stated duties and responsibilities of public health educators and the recommended qualifications for their preparation and the preparation offered by selected schools of public health. The study, carried out between 1953 and 1956, concerned only official health agencies and public health educators employed by them, a limitation felt necesary in order to confine the variables to a manageable number.

## Previous Studies

Job analyses and time studies have been used in the field of public health since the 1930's and have been summarized elsewhere.[4, 5] These methods have been applied only recently, however, in the area of health education. In general, studies concerned with the

duties and functions of public health educators in health agencies, with the requirements for their employment in official health agencies, and with their preparation in schools of public health have been limited in number and in scope.

Reports of three time studies of public health educators include two which were limited to one state each and a third which analyzed time as indicated by annual reports. Milne and his associates reported the time distribution for various public health workers in Mississippi including the health educators.[6] A more detailed and comprehensive time study of public health educators employed by the California State Department of Public Health was made in 1954.[7] Anderson analyzed the time distribution of public health educators in 38 local health departments as determined from annual reports of the departments.[8]

Three studies which include job analyses of health educators have appeared. Rash reported analysis of the duties of 26 such professional workers, dispersed in seven states and employed in secondary schools, colleges, and universities, as well as in official and non-official health agencies.[9] A study by Derderian included an investigation of the functions of 46 health educators employed in official and voluntary health agencies in Massachusetts and an assessment of the preparation of 22 of these who held masters' degrees from schools of public health.[10] In a study reported by Galiher and Wright a random sample of 171 persons, 11 per cent of the members, in the Public Health Education Section of the American Public Health Association were interviewed.[11] One objective was to find out what duties were discharged by health educators.

In addition to Derderian's study, one other report concerned with the preparation of public health educators in schools of public health has appeared. This report summarizes replies from five of the seven schools offering programs of study for public health educators. These were submitted in preparation for a conference on the teaching of health education in these schools.[12]

## Methods of Study

Data for this study were obtained from surveys of (1) 199 merit system statements for 151 health educator positions in 47 state and five territorial health agencies, and for 88 positions in local health agencies located in 28 states and two territories; (2) 100 selected public health educators of whom 48 were employed by state or territorial, 37 in county, and 15 in city health agencies distributed over 33 states and four territories; (3) the content of the educational programs for health educators in seven schools of public health as perceived by faculty directing these programs; * and (4) the stated educational qualifications for public health educators prepared by the American Public Health Association Committee on Professional Education.[13]

An item analysis of the merit system statements was made, frequencies determined, and groupings established. Items were grouped under six principal headings: duties and responsibilities, knowledge and understanding, abilities and skills, personal traits, educational background, and experiential background. The frequency and distribution of items under these general headings and the categories for each heading are shown in Table 1.

Questionnaires based on this item analysis and these groupings were then

* The seven schools of public health in the United States which offered programs of study for public health educators at the time of this survey were included. They were located at the following universities: California, Columbia, Harvard, Michigan, Minnesota, North Carolina, Yale.

**Table 1—Headings and Categories Employed in the Tabulation of Data from Merit System Statements, Showing Number of Separate Items Listed for Each Category by the Tabulation**

| Headings and Categories Under Each | | No. of Separate Items Listed |
|---|---|---|
| Duties, Work Activities, and Responsibilities | | 132 |
| Administration | 14 | |
| Public relations | 15 | |
| Community organization and service | 13 | |
| Consultant functions | 19 | |
| Education | 42 | |
| Communication or dissemination of information | 29 | |
| Knowledge and Understanding | | 129 |
| Personal health | 9 | |
| Public health | 41 | |
| Public health education | 48 | |
| School health | 17 | |
| General education | 8 | |
| General knowledge | 6 | |
| Abilities and Skills | | 101 |
| Size up and meet situations, analyze and make decisions | 20 | |
| Plan, organize, or execute work | 24 | |
| Work and cooperate with people | 18 | |
| Present facts simply and effectively | 25 | |
| Train others, direct or supervise their work | 10 | |
| Exercise creative ability | 4 | |
| Personal Traits | | 51 |
| Health and appearance | 9 | |
| Interpersonal relations, understanding, or maturity | 10 | |
| Performance or integrity | 24 | |
| Ability or willingness | 8 | |
| Educational Requirements | | 35 |
| Experiential Requirements | | 23 |
| | | 471 |

constructed to obtain comparable information from the 100 public health educators and the health education faculty members in the schools of public health. A time analysis by 76 of the health educators permitted a more intensive study of their tasks.

Responses from the two questionnaires and the time analysis were categorized and relationships between the frequencies were studied. The response in each category was ranked according to the emphasis it received and consistencies with comparable data selected from three sources—the merit system statements, the selected public health educators, and the health education faculty members—were determined by the Kendall rank correlation method. The data on educational and experiential backgrounds from all sources and for the satement of educational qualifications were not amenable to statistical treatment but were analyzed and compared wherever possible.

## Major Findings

### A. Consistency of Relationship

1. No definite pattern of consistency was apparent in the data. Statistical significance was not demonstrated for

**Table 2—Correlations of Data for Duties, Knowledge, Abilities, and Personal Traits of Public Health Educators from the Four Principal Sources**

| Correlations of Data | Correlation Coefficients | | | |
|---|---|---|---|---|
| | Duties, Work Activities, and Responsibilities | Knowledge and Understanding | Abilities and Skills | Personal Traits |
| Selected public health educators and merit system statements | 0.067 | 0.067 | 0.600 | 0.333 |
| Schools of public health and merit system statements | 0.733 | 0.200 | 0.333 | 0.000 |
| Selected public health educators and schools of public health | 0.333 | −0.200 | 0.200 | 0.667 |
| Time of selected public health educators and schools of public health | −0.067 | | | |
| Time of selected public health educators and merit system statements | 0.200 | | | |
| Time of selected public health educators and frequency of selected public health educators | −0.467 | | | |

the correlations used to determine consistency. This is shown in Table 2. Therefore, the correlations were employed as general indexes of consistencies in the data. These are shown in Table 3.

2. High consistency was found for the duties and responsibilities of health educators provided for in the preparation in the schools of public health and stated for merit system positions in health education, for the abilities and

**Table 3—Estimates of Consistencies in Selected Data from Four Sources**

| Comparisons of Data | Degree of Consistency | | | |
|---|---|---|---|---|
| | Duties, Work Activities, and Responsibilities | Knowledge and Understanding | Abilities and Skills | Personal Traits |
| Selected public health educators and merit system statements | Very slight | Very slight | High | Moderate |
| Schools of public health and merit system statements | High | Slight | Moderate | None |
| Selected public health educators and schools of public health | Moderate | Slightly negative | Slight | High |
| Time of selected public health educators and schools of public health | Slightly negative | | | |
| Time of selected public health educators and merit system statements | Slight | | | |
| Time of selected public health educators and frequency of selected public health educators | Moderately negative | | | |

skills considered important by selected public health educators and stated by merit systems, and for the personal traits considered important by the schools and by the health educators.

3. Moderate consistency was found for the duties and responsibilities discharged by public health educators and provided for in their preparation in the schools of public health, for the abilities and skills provided for in the preparation and stated for merit system positions, and for the personal traits perceived important by the health educators and stated for merit system positions.

4. The frequency with which health educators discharged certain duties and responsibilities was found unrelated to the time devoted to these activities.

5. No consistency was found for the knowledge and understanding important to public health educators as stated by merit systems, provided for by the schools of public health, and perceived important by the selected public health educators.

B. Duties and Responsibilities

1. Merit system statements covering health education positions were found to give primary attention to duties and responsibilities concerned with communication or dissemination of information. Public relations, consultant functions, and education were emphasized moderately. Duties and responsibilities pertaining to community organization and service were stated less frequently and administrative duties and responsibilities only infrequently.

2. The actual duties and responsibilities reported by the study group of selected public health educators show that communication or dissemination of information and education were the two categories which claimed the greatest number of the approximately 42 hours which constituted the average work week. However, the public health educators were called upon most frequently to carry out public relations and consultant functions, duties and responsibilities which required low and moderate amounts of time, respectively. The lowest number of hours were devoted to community organization and service duties and responsibilities but these were reported to be of moderate frequency. Administrative duties and responsibilities required a moderate amount of time, although they were reported to be of lower frequency. A summary of the time reported by the study group of public health educators for all categories is shown in Table 4.

3. The schools of public health were found to provide preparation for duties and responsibilities in all categories. However, the preparation gave some emphasis to consultant functions and to community organization and service. Organization for local rather than state or school programs was stressed. All schools considered field experience a part of the total curriculum necessary to provide this preparation.

4. Duties and responsibilities related to community organization and service, consultant functions, education, and communication or dissemination of information are given more emphasis in the APHA statement of educational qualifications for health educators than activities related to administration and public relations.

5. Certain duties and responsibilities stood out by contrast. Directing other staff members, reported high in frequency as an actual duty and responsibility, was not provided for in the preparation. Nor did the preparation always provide instruction in the use of radio and television as health education media. However, appearance on radio and television as well as preparation of materials for these media were low in frequency as actual duties and responsibilities. Recruitment of public health personnel was stated only rarely as a duty or responsibility. Little at-

**Table 4—Time Devoted to Specified Health Education Activities by 76 Selected Public Health Educators, Mean of Three Time Logs**

| Activity | Percentage of Respondents Reporting Activity | Mean Hours per Week, per Respondent | | Percentage of Reported Time | |
|---|---|---|---|---|---|
| Administration | .. | | 7.3 | | 17.43 |
| Administration | 88 | 4.7 | | 11.22 | |
| Supervision and personnel management | 68 | 2.3 | | 5.49 | |
| Recruitment | 19 | 0.3 | | 0.72 | |
| Public Relations | 75 | | 2.6 | | 6.20 |
| Community Organization and Service | 51 | | 2.3 | | 5.49 |
| Consultant Functions | .. | | 6.4 | | 15.28 |
| Consultant services | 66 | 2.4 | | 5.73 | |
| Inservice resource | 51 | 1.5 | | 3.58 | |
| Intradepartment resource | 79 | 2.5 | | 5.97 | |
| Education | .. | | 9.4 | | 22.44 |
| Health department program in health education | 68 | 2.1 | | 5.01 | |
| Joint program in health education | 66 | 2.6 | | 6.21 | |
| School health | 58 | 3.0 | | 7.16 | |
| Staff education and inservice training | 54 | 1.7 | | 4.06 | |
| Communication or Dissemination of Information | .. | | 10.6 | | 25.29 |
| Communication program | 74 | 2.2 | | 5.25 | |
| Person-to-person communication | 55 | 2.0 | | 4.77 | |
| Newspapers, radio, television | 65 | 1.8 | | 4.29 | |
| Printed materials | 64 | 2.6 | | 6.21 | |
| Visual or audiovisual aids | 64 | 2.0 | | 4.77 | |
| Professional Development | 76 | | 2.7 | | 6.44 |
| Other Activities | 14 | | 0.6 | | 1.43 |
| Total | .. | | 41.9 | | 100.00 |

tention was given to this activity in the preparation provided by the schools of public health and the selected public health educators reported their participation in recruitment activities was infrequent and with little time devoted to them.

6. Certain variations were found in the data from each source. A comparison of state or territorial and local positions disclosed variations both in the merit system statements and in the actual duties and responsibilities discharged. Actual duties and responsibilities were found to vary also by month, by length of employment, and by the school of public health in which preparation was received. Preparation in the schools of public health varied somewhat as to the duties and responsibilities emphasized.

### C. Knowledge and Understanding

1. Merit system statements were found to place greatest emphasis on knowledge and understanding concerned with public health and public health education. General education, such as basic knowledge of psychology, sociology, and the biological sciences, was emphasized moderately.

2. Public health educators reported knowledge and understanding of public health and public health education highly essential, and knowledge of per-

sonal health moderately so. Knowledge and understanding of school health was reported least essential. Certain variations depending upon place of employment were found, for example, state or territorial health educators compared with county or city-county.

3. Preparation in the schools of public health, while spanning all of the categories of knowledge and understanding included in this study, was found to emphasize school health, public health, and public health education. Knowledge and understanding of mental health, nutrition, adult education principles and methods, educational psychology and learning, and some of the social sciences received special attention. Certain knowledge and understanding not included in the preparation given by the schools of public health was anticipated by the schools from educational preparation prior to admission.

4. The APHA statement on educational qualifications was found to place emphasis on knowledge and understanding pertaining to public health education, general education, and general knowledge and to give little attention to school health and public health.

D. Abilities and Skills

1. Requirements for merit system health education positions were found to emphasize abilities and skills to work and cooperate with people, to present facts simply and effectively, and (to a slightly less degree) to plan, organize, and execute work. Specific abilities and skills stressed pertained to critical judgment, interpersonal relationships, effective oral and written expression, and program planning. Those dealing with administration, personnel supervision and direction, preparation of health education materials, and leadership were stated infrequently.

2. Public health educators rated highest the abilities and skills pertaining to working and cooperating with people. Rated slightly less essential were those concerned with sizing up and meeting situations, analyzing and making decisions, and with presenting facts simply and effectively. Those pertaining to planning, organizing, and executing work and to exercising creative ability were reported moderately essential. Abilities and skills in training others and in directing and supervising their work were rated least essential.

Specific abilities and skills rated highest by these public health educators pertained to dealing tactfully with professional persons and the public, working effectively with others, planning cooperatively, and exercising good judgment. Rated lowest were the abilities and skills to handle data statistically, gather data and conduct studies, maintain records and files, interpret laws and regulations, and supervise or direct other personnel. Certain variations by place of employment were found, for example, state or territorial educators compared with county or city-county.

3. Preparation in the schools of public health provided for development of abilities and skills in all six categories but emphasized those having to do with working and cooperating with people and with presenting facts simply and effectively. Exercising creative ability received least attention. All schools assumed that to a considerable extent the development of abilities and skills resulted from field experience or from total curriculum experiences rather than from a specific course.

4. In the APHA statement of educational qualifications the abilities and skills to plan, organize, and execute work and to work and cooperate with people and to present facts simply and effectively were stressed.

E. Personal Traits

1. Merit system requirements for health education positions placed little emphasis on personal traits. Where

such requirements were stated emphasis was on health and appearance. Personal traits concerned with performance and integrity were moderately emphasized and those dealing with interpersonal relations, understanding, and maturity lightly emphasized.

2. Public health educators in the study group perceived personal traits concerned with interpersonal relations, understanding, and maturity as highly essential and those concerned with performance and integrity as only slightly less so. Traits pertaining to health and appearance were rated lower. Specific traits perceived least important included freedom from disabling defects, forcefulness, teaching ability, administrative ability, and willingness to travel. Certain variations by employing agency and school of public health were found.

3. The schools of public health engaged in preparing public health educators placed major emphasis on personal traits concerned with interpersonal relations, understanding, and maturity and moderate emphasis on performance and integrity. In general, they relied upon credentials submitted, personal references, and interviews to assess the personal traits of applicants seeking admission. One school reported the use of a written essay and a battery of tests as additional procedures.

All the schools attempted to rate the personal traits of students enrolled in the programs of study for public health educators. They reported also that prospective employers of public health educators frequently sought information on personal traits and inquired most often about the graduate's ability to work with others and his leadership potential. Information on traits such as tact, emotional stability, maturity, and adaptability was sought slightly less frequently.

4. The APHA statement of educational qualifications was found to contain some references to traits concerned with health and appearance; with interpersonal relations, understanding, and maturity; and with performance and integrity. The latter reference is slight.

### F. Educational Background

1. A number of fields of study as possible educational backgrounds for public health educators were presented by all four sources of data.

2. Requirements for health education positions under a merit system placed emphasis on educational backgrounds in health education or public health but usually included a wide choice of educational fields as options. The master of public health degree, frequently with emphasis in health education, was a requirement for positions named in over half the merit systems. Another third of the positions listed this degree as one of several options of graduate education or years of experience required.

3. Schools of public health admit persons with any one of several educational backgrounds to the programs of study in health education. However, at least some preparation is expected in the biologic, physical, and social sciences and in education with more than elementary preparation in one or two of these. Attempts to strengthen the weaker fields of preparation are made, sometimes concurrent with study for the master's degree.

4. The selected public health educators had more than elementary preparation in at least two of the four fields: education, biologic science, physical science, and social science. Over half had undergraduate majors or minors in biologic science, one-third to one-half in social science and in physical science or mathematics, and over one-fourth in education. One-third of the group had an undergraduate or graduate major or minor in some combination of health, physical education, and recreation which included preparation in education and in biologic science.

5. The APHA statement of educational qualifications recommends seven major areas for the educational background for health educators.

### G. Experiential Background

1. Experience, other than academic, was a recognized factor in the background of public health educators named by all four sources of data.

2. Only two of the 199 merit system statements for health education positions examined did not list an experience requirement. Public health, public health education, health education, and related educational work were specified most frequently as desirable or required fields for experience. Approximately one-fourth of the statements suggested the possibility of substituting education, beyond the minimum required for the position, for a part or all of the experience required.

3. Schools of public health normally required three years of experience in public health or teaching prior to admission to the program of study in health education. One year of graduate study supplemented by supervised field experience in public health frequently is accepted in lieu of the three years' work experience.

4. Among the selected public health educators over two-thirds reported experience in public health or public health education prior to admission to a school of public health. Over half, with some overlap, had teaching experience prior to admission. Secondary science or mathematics were the teaching fields specified most frequently. Experience following the granting of the master's degree was largely in health education, although a few educators had been assigned administrative duties in other fields of public health.

5. The APHA statement of educational qualifications for health educators recommends experience to provide professional maturity and suggests the possibility of securing the necessary experience in an allied field, especially teaching, if experience in public health is not possible.

### H. Other Findings

1. Certain variations were found in the programs of study for health educators offered in the schools of public health. However, the preparation provided in the seven schools had more common than dissimilar elements.

2. Merit system statements for health education positions, in general, vary widely but have some common properties.

## Conclusions

The findings of this study led to the conclusion that no definite pattern of consistent relationships existed between the work done by the selected public health educators, the requirements for merit system positions in health education, the educational preparation offered in the schools of public health, and the APHA statement of educational qualifications.

A further conclusion was that the scope of the duties and responsibilities, knowledge and understanding, and abilities and skills of public health educators is very broad. This was reflected in their preparation, their activities, the requirements for their employment, and the statement of educational qualifications.

Certain recommendations appear evident from these findings. One of these is the need for the schools of public health, public health educators employed in official health agencies, the merit systems, and public health administrators to work toward better understanding and greater consistency in order that public health educators may be better prepared, employed, assigned, and stim-

ulated to make the fullest contribution of which they are capable. To effect this the schools need to examine the knowledge and abilities now stressed in their programs of study in relation to those found important by public health educators, merit systems need to reconsider their stated requirements for positions, and public health educators need to consider if they are seeking the opportunities which enable them to make full use of their professional preparation. Administrators can help in the revision of merit system requirements and by giving attention to the duties and responsibilities assigned to public health educators.

It seems evident, too, that in the appointment of public health educators, merit systems and public health administrators need to consider the personal traits concerned with interpersonal relations, understanding, and maturity. So much of the public health educator's work is with people that these traits should receive highest attention. Data from the schools of public health and the public health educators who participated in this study support this conclusion.

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Journal of Public Health

## EDITORIALS

### Businessmen Look at Employee Health Services

Establishing a health service in industry is partly a matter of economics: how much does a health service cost and what are the returns? But it is also a matter of management's attitudes and information about such matters. Efforts to encourage the adoption of employee health services involve the commitment of personnel and other resources. To insure maximum returns on this expenditure, it is necessary to know how businessmen feel about employee health services, what kind of information they want about these matters, and the most appropriate channels of communication by which they may be reached. The findings of a recent survey [1] conducted for the U. S. Public Health Service by the Institute for Social Research, University of Michigan, suggest how to reach managers of business establishments, and what kinds of information are likely to be effective. Interviews were held with executives of 262 business enterprises, representing a cross-section of industry and commerce, chosen over a wide geographic area, and grouped according to the number of employees, ranging from 50 to over 500.

Most businessmen agree that employee health is important to them. Eighty per cent of the 262 executives interviewed said that they have some responsibility for the nonoccupational health problems of their employees. At the same time, the matter of employee health services is neither salient nor pressing for most executives. Many other matters considered to be more urgent compete for their attention. But while employee health services are not uppermost in the minds of executives, most of them would like more information on the subject.

An important finding of the survey is that the manager's concept of the health needs of his establishment appears to be at the heart of the problem of increasing the number and improving the quality of employee health services. Businessmen who do not employ a doctor or nurse think of a health service as concerned solely with the treatment of injured employees. All too often, management's concept of a health service is a room where the bloody, the battered, and the bruised are carried in on stretchers. Such an idea is a substantial barrier to further expansion of the number of employee health services. There is no awareness of the potential gains to be derived from the day-to-day preventive activities of a doctor or nurse, the important role of the doctor and nurse in good employee relations, and the possible savings in sick leave costs,

Contacts that businessmen have with most sources of health information do not appear to create an active desire to have employee health services. In fact, discussions with governmental health representatives were found to have a slightly negative effect. Similarly, discussions with physicians in general appear to be unproductive. On the other hand, two kinds of contact, while relatively infrequent, seem to encourage the adoption of employee health services. These involved discussions with practicing industrial physicians and with workmen's compensation insurance carriers. It is also significant that managers rate most highly sources of information within their own industries. These sources include conventions and meetings of the industry, visits to companies, literature of trade associations and other publications within the industry, and talking with other businessmen in the same industry. On a community level, the most significant source is "talking with other managers in the community." This preeminence "of talking with other managers" in each context—industry and community—points up the importance of personal contact as a channel for providing information and influencing action.

In the choice of informational materials, a majority of managers would like case studies, particularly from businesses like their own. At the same time, a sizable proportion prefer statistical data derived from the experience of a sample of industries. In both cases, information is wanted about the internal operation of employee health services.

Among managers who have a doctor or nurse, more than half are willing to improve their employee health program. Discussions with public health officials and with representatives of workmen's compensation insurance companies seem to strengthen this inclination. The mere fact of having a unionized establishment seems to have little effect on the businessman's willingness to improve. Unions seem to be a positive element for the improvement of employee health services when the climate of management-union relations is not one of conflict. Moreover, managers who employ a doctor are more willing to improve than those who have only a nurse. These findings emphasize that the businessman depends on his professional personnel in health matters, and that information encouraging improvement of health services should be directed to medical personnel in industry. Managers are more interested in costs and employee acceptance of various improvements.

The types of establishments most likely to be persuaded to organize employee health services are those in industries where health services are already prevalent, those with 250 or more employees, and those with a policy of providing sick leave for employees, where probably reductions in absenteeism stemming from a health service could prove beneficial. Failure to adopt a health service is not due so much to resistance to the idea as it is to a lack of information about costs and values of employee health services. Clearly, here is an important area for a properly planned and executed educational activity.

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## Self-Analysis and Change in Public Health

THE RECENT statement of the U. S. Public Health Service urging selective use of the mass x-ray method for discovery of cases of tuberculosis has implications extending far beyond the immediate field of interest. This recommendation comes just about twenty-five

years after mass surveys of apparently healthy populations by means of the x-ray were undertaken and developed.[1] The mass survey idea became a significant part of the tuberculosis control program at a time when it was felt that a large majority of the adult population of the United States could be included in an endeavor to find unsuspected tuberculosis in its early stages. Furthermore, this was a period when the x-ray film became more easily available through portable units, thus resulting in greater effectiveness and economy of operation.

Prior to 1933, tuberculosis surveys in New York City, for example, dealt with groups of children or with adolescent groups. The tuberculin test was used as a screening device and positive reactors were x-rayed. Even when the mass x-ray survey was introduced as an effective tool for case finding, there was an awareness among sophisticated public health workers that it would be most productive among adults of low income, the unemployed and the nonwhite population. Over the subsequent twenty-five years, however, this selective approach tended more and more to recede into the background as the mass survey was extended on a community-wide basis.

We have now come full circle with the recommendation by the Public Health Service that x-ray surveys to find cases of tuberculosis be conducted on a selective basis, with attention focused on "high risk" groups. These include hospitalized persons, migrant workers, members of low-income groups, and those known to be exposed to the disease. In low prevalence groups, tuberculin testing should be used as a first step with x-ray examination limited to those with positive reactions to the skin tests. Decisions on which groups to survey should be made by local authorities in the light of local conditions and the expected yield of new cases.

Two major factors are responsible for this new approach. One is the spectacular advance in coping with the disease, particularly in the past fifteen years. The other is the new concern with the cumulative effects of exposure to low-level radiation. As a result, the nature of the tuberculosis problem has undergone a highly significant change, and it is to the credit of the U. S. Public Health Service and of the National Tuberculosis Association that they recognized the need for a review of current practices in relation to the altered situation and have drawn the consequences in terms of action. Evaluation and reappraisal of public health programs from time to time is certainly not a new idea but the action of the Public Health Service underlines forcefully the importance of such action.

Change is inevitable in public health practice since the latter is the embodiment of public policy based on scientific, political, economic, social, and ethical considerations. As conditions change, as new knowledge becomes available and is applied, as other elements in the community impinge on health problems, adjustments become necessary in the handling of public health questions. Such changes may be unsettling and uncomfortable, but they are essential. This can be seen equally well in areas other than tuberculosis. An analogous situation exists with regard to the nature of the venereal disease problem in the United States today, and how it should be handled. Some claim that venereal disease is on the increase.[2] Others deny that there is a "rising tide" of syphilitic infection.[3] Still others, for example, Silverman and Hedrich in the current Journal, question the relevance of such practices as the premarital blood examination for the control of venereal disease. And yet the fact remains that in every community there is a reservoir of infection of both syphilis and gonorrhea. From time to time individuals dip into the infectious reservoir and

cases of venereal disease will occur. As Fiumara, et al., have recently shown, such cases may give rise to epidemic outbreaks under appropriate circumstances.[4] Apparently the behavior which creates such situations is more likely to occur in certain groups of the population than in others. Consequently, what is needed now is a reappraisal of the nature of the venereal disease problem and its control.

"Out of the old fields cometh the new corn," said Chaucer, but we may add only if the fields are plowed up at regular intervals, well manured and carefully cultivated.


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## The Retreat of the Mass Diseases

MANY PARTS of the world, especially the less developed areas, have long suffered from the effects of mass diseases, that is, conditions which are so widespread and affect such a large proportion of the population as to be a dominant factor in hindering social and economic development. Furthermore, such conditions mask other diseases to the point of making them clinically irrelevant until the mass disease is removed. In recent years, health conditions have been improving steadily throughout the world, but the most rapid progress has taken place in areas where mass diseases have been and are being brought under control. As indicated by declining mortality, the economically less developed countries are reaping the benefits of modern medicine in relation to mass infections and nutritional diseases where specific causes, preventives, and cures have become well known.

Malaria, for example, is now controllable and is retreating with spectacular acceleration. It affects millions of people annually and is still the world's greatest and probably most costly public health problem. Of the world's total population of 2,650,000,000, it is estimated that 1,070,000,000 live in malarious areas. In 1955, there was an estimated total of 200 million cases of malaria and the mortality from the disease was estimated at two million. And this situation exists after a sharp decline in mortality over the preceding five years. According to a recent issue of the Epidemiological and Vital Statistics Report (10:351-412, 1957) of the World Health Organization, which deals with the trend of mortality from infectious and parasitic diseases between 1950 and 1955, mortality from malaria in 28 countries with a population of 564,000,000 decreased by 31 per cent. These countries contain about one-sixth of the world population, but unfortunately there are no data from the Soviet Union, China, or India. From another source, however, it is reported that under its control program India reduced the number of cases of malaria from 75 million a year to less than 20 million and the deaths from malaria from 750,000 to 200,000 a year.

The extensive DDT-residual-spray work carried out in many countries has greatly increased the number of people protected against this disease. As an instance, in six Asian countries (Afghanistan, Burma, Ceylon, India, Indonesia, and Thailand), recent estimates indicate that malaria control programs have directly protected 121 million people out of 250 million living in malarious areas. Furthermore, changing approaches to malaria control have made it possible to think optimistically in terms of the

"eradication" of malaria. This new approach is based on recognition of the fact that "malaria eradication does not mean or require eradication of the anopheline species that carry the disease in a given area. It only means eradication of the malaria parasites."[1] Inasmuch as infection generally lasts no longer than three or four years, at most, except in certain rare forms, an effort is made to establish complete control of the mosquitoes for that period through intensive DDT residual spraying. If the life-and-infection cycle in the "parasite to mosquito to human" circuit is thus interrupted and the human population loses its parasites, mosquitoes may remain, but they will not be disease carriers because they will find no infected human beings to bite.

In the 28 countries mentioned above, tuberculosis in 1955 accounted for 125,000 deaths, or three-fourths of all deaths due to infectious and parasitic diseases occurring over the age of 15. Whooping cough and measles were the main causes of death under one year of age. Between the ages of one and ten dysentery took first place.

Since 1950, there has been a remarkable decrease in mortality from infectious and parasitic diseases, amounting in the group of countries under review to about 50 per cent. This decline, it is estimated, resulted in the saving of some 816,000 lives in a period of five years. Whooping cough shows relatively the largest reduction in mortality (63 per cent). Poliomyelitis mortality diminished by one-half during the period. In the group of countries covered by the WHO report, there were 3,092 deaths caused by poliomyelitis in 1955 compared with 6,669 in 1952 and 5,301 in 1950. Syphilis in infancy has been reduced to 18 per cent of the figure for 1950. Only mortality from measles and meningococcal infections did not diminish considerably.

There has been a striking decline in the number of deaths from pneumonia since penicillin and other antibiotics became available as shown by a recent WHO survey.[2] Nonetheless, pneumonia still ranks among the diseases causing the greatest number of deaths even in the developed countries where antibiotics are widely used. It is a leading cause of death particularly among infants and the aged.

Considerable progress has also been made in the control of a number of parasitic diseases that produce a very heavy burden of disability. Among these are bilharziasis, filariasis, yaws, and syphilis. For example it is now possible to control onchocerciasis, the blinding filariasis, which affects nearly 20 million people in Central and South America as well as in tropical Africa. There are now effective and practical methods of combating the parasitic worm and its vectors, and successful campaigns have been conducted in Guatemala and Mexico to reduce the incidence of onchocercal blindness and other disabling eye lesions.

While in many countries, particularly in economically less developed regions, infectious and parasitic diseases are still a serious health problem and constitute the main causes of mortality and morbidity, mortality rates have generally continued on a downward trend and epidemic diseases are being brought under increasing control. The optimism implied by this broad picture of retreating mass diseases must, however, be qualified, along several lines. Progress has indeed been substantial, but it is still small compared to the vast extent of disease in the world today. Trachoma and infectious conjunctivitis, for example, affect no less than 400 million people all over the world. These diseases present a vast social problem, because they produce a high percentage of blindness or disabling eye lesions. Furthermore, as the recent United Na-

tions Report on the World Social Situation (1957) points out, there has been an explosive growth of cities in economically underdeveloped areas during the past few decades, and it can be assumed that urban growth will proceed at a tremendous pace for some years to come in these parts of the world. In all likelihood, this will affect the health situation in numerous ways, some of them favorable, others inimical. In Latin America, for example, the cities, are incomparably better off in medical care and other social services than the countryside, and use is made of such services. This is true as well of towns in Africa. At the same time, the urban environment may contribute to ill health through overcrowding, malnutrition, and the sanitary problems created by the rapid rate of urban growth. Moreover, rural migrants to towns may bring with them certain infectious and parasitic diseases. Rapid urbanization may also have an adverse effect on the mental health of the newer urbanites subjected to the stresses of migration or unaccustomed social mobility.

However, one thing is clear. Present trends indicate continuing health improvement. The retreat of the mass diseases offers ample evidence on this point. Concomitantly, the means by which this result is being achieved—large-scale employment of immunization, antibiotics and insecticides—has introduced a new element of great potency. Whereas control of the mass diseases was formerly a relatively slow process, it can now be achieved with increasing rapidity and this is bound to have an important impact on the social organization of vast populations. This is the challenge which confronts health workers today over a large part of the world.

1. Pampana, E. J. Changing Strategy in Malaria Control. Bull. World Health Organization 11:514, 1954.
2. Mortality from Pneumonia. World Health Organization Epidemiological and Vital Statistics Report, Vol. 9, No. 9, 1956.

## Scientific Exhibits Cited—Cleveland Annual Meeting

At the 86th Annual Meeting in Cleveland, Ohio, the Committee on Scientific Exhibits, Sol Lifson, chairman, evaluated the Scientific Exhibits with the cooperation of 21 Members and Fellows.

Of 65 Scientific Exhibits, the committee selected 10 to receive certificates of merit. The 10 top exhibits were sponsored by:

American Medical Association
Metropolitan Life Insurance Company
National Association for Mental Health
National Council on Alcoholism
National Society for the Prevention of Blindness
National Tuberculosis Association
New York State Department of Health
Pan American Sanitary Bureau
Pennsylvania Department of Health
Philadelphia Department of Public Health

# REPORT OF THE CHAIRMAN OF THE EXECUTIVE BOARD OF THE AMERICAN PUBLIC HEALTH ASSOCIATION TO THE GOVERNING COUNCIL 1956–1957

## Fresh Winds Are Blowing

A QUARTER OF a century ago the philosopher Alfred North Whitehead pointed out "Mankind is now in one of its rare moods of shifting its outlook. The mere compulsion of tradition has lost its force. It is our business—philosophers, students, and practical men—to recreate and reenact a vision of the world including those elements of reverence and order without which society lapses into riot, and penetrated through and through with unflinching rationality. . . . Epochs for which, within the limits of their development, this vision has been widespread are the epochs unfading in the memory of mankind."

The intervening decades have more than borne out Whitehead's view. They have been years of turbulence, of upheaval and crucial change, an intensely confused period marked by a melodramatic and kaleidoscopic variety of incident. Beneath the surface diversity, however, general trends lead like red threads through the maze and reveal certain basic unities. For one thing, our period is marked by a unifying and relatively constant element in its climate of opinion: whether we like it or not, change has become an integral part of our world.

In part, this is a consequence of the remarkable scientific and technological afflorescence of the first half of the 20th century. The continuing onrush and impact of the changes attendant upon this process inevitably have had important consequences for the public health. We have witnessed in the United States an unprecedented over-all improvement of community health undreamed of by the nine physicians and one architect who met in 1872 to establish a national sanitary association. Today the community is in a better position than ever before to control its environment and to preserve health and avert disease. More and more, men can consciously plan and organize for better health, because available knowledge and resources make it possible in many instances for them to act with a clear understanding of what they are doing.

This is not to imply that there are no more problems. Many health questions have been solved in considerable measure, yet this knowledge awaits application in practice. There are problems of community health that require social and political action guided by available technical and professional knowledge. As new areas of public concern and obligation are defined by advancing knowledge in the field of health, one would expect the administrative organizations set up to protect the health of the community to respond in an appropriate manner. Unfortunately, in numerous aspects of community health, demographic, economic and social trends have out-stripped the growth of institutional forms adequate to meet the changing needs of our time.

Furthermore, the horizon of health workers can no longer be limited to the local or even the national community, but must extend outward to the inter-

national community. Today, we are all members one of another; and so each in our own community and in our own work, we must strive toward a goal of freedom from disease, want, and fear.

All this relates to the present and even more significantly to the future of the American Public Health Association. Under the pressures and uncertainties created by our changing world, a groundswell of unease and unrest has been evident among public health workers. What is to be the design of community health in the world of tomorrow? What will be the role of the health worker? Can we envisage the goals and how can we move toward them? These questions were clearly in the minds of those who responded actively to the question "Where Are We Going in Public Health?" which was discussed at the Annual Meeting in Kansas City. Sensitive to the ferment stirring those concerned with the health problems of the American community, the Association has not permitted its proper preoccupation with the improvement of what are now recognized as parts of the standard health program to blind it to the widening health challenges of the future.

Goethe remarked that "What you cannot understand, you cannot possess." Recognizing this truth, the Association through its Executive Board initiated a critical analysis of health in this changing world of ours and of the place and function of the Association in relation to the inexorably oncoming challenges of the future. The special Task Force charged with this responsibility endeavored with perspicacity and skill to turn productive thinking into recommendations for creative acting which would enable the Association to enhance its leadership and greatly develop its functions in meeting the newer public health problems. All concerned saw clearly that the heart of the matter is the service the Association can render to the public health profession and the public, both individually and in groups. There was, furthermore, an equally clear recognition that it would be necessary to secure funds sufficient to underwrite many of the additional costs that would arise. The creative vision of the Task Force Report, and its action program for orderly implementation, indicated the path to be followed. Since then a number of significant steps have been taken which will make it possible organizationally to move toward the objectives envisaged by the Task Force.

## Future Program of the Association: Implementation and Financial Support

A major focus of activity during 1956–1957 has been the working out of the provisions of the Task Force Report. This has proceeded along two lines. The important problem of financing the long-range development plan has been approached in several ways. It had been recognized that funds would have to be sought from the Association membership, and from such outside sources as foundations, corporations, and individuals. For this reason, the recent announcement of grants from the Rockefeller Foundation and the W. K. Kellogg Foundation to the Association is exceedingly gratifying. The grants, in the same amounts, provide up to $300,000 toward the development of an expanded program of services to professional workers in public health, and is available during a three-year period beginning in late 1957.

That the Foundations saw fit to make the grant is ample testimony to the vital significance of Task Force recommendations. At the same time, this action is a challenge to the Association and its membership. How far are we prepared to go, as individuals and as a professional group, to see that the total plan outlined by the Task Force is put into action? In this connection, high tribute

must be paid to the President, John W. Knutson, D.D.S., who has given unstintingly of his time and energy toward the achievement of the Task Force objectives. He has spoken to many groups on this subject and he has written to the Fellows inviting voluntary contributions as well as offers of help in soliciting funds.

Another action concerned with financing was the decision by the Executive Board to recommend to the Governing Council that dues of Fellows be increased to $20 and of Members to $12 effective January 1, 1958. The dues increase will attest to the agencies to whom the Association looks for larger support than can be expected from its individual members, that the profession itself is contributing substantially to the expanded program. This is a good place to repeat what the membership has been told many times—that every dollar from membership dues must be matched by four additional dollars from other sources to finance the current activities of the Association. Much more than present income is needed for additional services seen as essential by the Task Force.

Money or the lack thereof has not prevented progress in making the structural changes that will render it organizationally possible to proceed toward Task Force objectives. This is the second line of action along which important steps have been taken. When the Executive Board met in February, the committee structure of the Association was revised in line with Task Force recommendations. The May issue of the Journal carried the 1956–1957 Committee List in which the new organization is apparent.

## Technical Development Board and Program Area Committees

The Technical Development Board has been appointed and Program Area Committees organized in the following eight areas: Accident Prevention, Child Health, Chronic Disease and Rehabilitation, Environmental Health, Medical Care Administration, Mental Health, Public Health Administration, and Radiological Health. In many instances, research projects, studies and interests of committees in existence before the creation of the Technical Development Board have been continued. Where pertinent and appropriate, the friuts of these endeavors have been retained and transferred to the related Program Area Committees, described below.

### Public Health Administration

The Program Area Committee on Public Health Administration, under Vlado Getting, M.D., will to a considerable extent continue many of the functions of the former Committee on Administrative Practice, and especially the Subcommittees on State and Local Health Administration and Local Health Units. At this point it is appropriate to comment on the disappearance of the Committee on Administrative Practice after 36 years of constructive achievement. Its contributions were reviewed in last year's report. Work on the projects initated under its aegis have continued and reports on these will be made to the Committee on Public Health Administration. Among these projects are "A Glossary of Uniform Administrative Terminology in Program Planning and Evaluation of Public Health Programs," revisions of the "Guide to a Community Health Study," and a new statement of principles on complete coverage of the country with all basic public health services. During the past year, also, an extensive study of public health and hospitals in the city and county of St. Louis, Mo., was carried out under the direction of Edward Press, M.D., field director, Ira Hiscock, Sc.D., and Roscoe Kandle, M.D., as chief consultants. The results have been published

in a report entitled "Public Health and Hospitals in the St. Louis Area—A Mid-Century Survey."

The Subcommittee on Chemical Poisons is continuing its activities under the Committee on Public Health Administration. It has played a major role in the establishment of a National Clearinghouse for Poison Control Centers which is now well under way in the Public Health Service. Together with the American Academy of Pediatrics, the subcommittee helped to prepare and distribute "A Guide to the Organization of a Poison Control Center," and is also participating with the American Medical Association and the American Academy of Pediatrics in a nation-wide cooperative project, involving a dozen posion control centers and medical schools, to evaluate the most effective method of treatment for ingestion of kerosene and related petroleum distillates.

#### Radiological Health

The former Task Force on Radiological Health, under Daniel Bergsma, M.D., has been converted to a Program Area Committee and is continuing to work on documents already drafted. These are a statement on "Public Health Policy on Radiological Health" and two alternate drafts (with and without a commission) of a model state radiation protection act.

#### Accident Prevention

The Program Area Committee on Accident Prevention has moved along under the substantial momentum gained as a prior subcommittee. A. L. Chapman, M.D., was retained as chairman. A joint conference between the American Public Health Association, the National Safety Council, and the Pubilc Health Service held in the spring of 1957 was the culmination of a series of study group activities in which the committee was prominently involved. One outcome has been the preparation of a 19-page mimeographed manual of tentative definitions of home accidents. When finally completed, it will undoubtedly be a valuable public health tool in advancing the study and control of the many elements involved in accident.

#### Medical Care Administration

Under the chairmanship of Dean A. Clark, M.D., the reorganized Committee on Medical Care Administration met in the spring of 1957. The major areas which this group plans to study are: health and dependency; preventive medicine and the utilization of hospitals; branch clinics and their effect on hospital use; health department practices in relation to medical care.

#### Mental Health

Similarly, the Program Area Committee on Mental Health, under the chairmanship of Ernest M. Gruenberg, M.D., met and laid out potential areas of activity. These include a manual of control methods, standards for mental health programs, professional standards for personnel, suggested curricula in schools of public health, and policies on interrelations among agencies concerned with mental health.

#### Chronic Disease and Rehabilitation

The Subcommittee on Chronic Disease and Rehabilitation has been converted into a Program Area Committee with Lester Breslow, M.D., as chairman. It is anticipated that one of its major activities will be continued work on a document dealing with the elements of a chronic disease program for state and local health departments.

#### Environmental Health

Under Dwight F. Metzler, C.E., the Program Area Committee on Environmental Health has continued the work on activities in this field; some of these had been started previously by the Subcommittee on Sanitation of the Com-

mittee on Administrative Practice.

At this point it must be abundantly clear that fresh winds are blowing through the Association. There is a stir and an interest which bodes well for the future. Progress in public health has been as much a product of enthusiasm and conviction, as of knowledge. Both the crusader and the scientist are needed. Mr. Harold Clurman, the eminent director, very aptly described the period of ferment in the American theater during the 30's as the "fervent years," and there are indications that this characterization will not be inappropriate for public health in the decades ahead. Certainly, the spirit in which many of the committees have taken hold of their tasks, without provision for travel expense for the members or the allocation of staff time, pending an expansion of the APHA budget, reflects a firm belief in the significance of these efforts. To these groups and to others the Association looks for the surveys, reports, recommendations, standards, and statements that will establish sound public health practice in the new areas and improve it in the old.

### Child Health

In this connection, special mention should be made of an old Association committee which has now become a Program Area Committee under the Technical Development Board—the Committee on Child Health, with Samuel M. Wishik, M.D., as chairman, which has a number of important accomplishments to its credit. During this year the energies of the committee and its staff have been channeled in two principal directions:

1. Promoting and encouraging distribution and appropriate use of publications already printed. For this purpose, the resources and services of the Mental Health Materials Center have been used. Furthermore, excellent and effective communication has been established with many health service groups and professional persons across the country. Attesting to the success of these efforts is the fact that during 1957 second printings of four of the guides were needed. Spanish translations of two appeared early in 1957; they had been chosen by the International Society for the Welfare of Cripples for professional distribution in Spanish-speaking countries.

2. Pushing the remaining guides toward publication. The original plans of the committee called for 12 guides. Seven were published in 1955–1956, dealing with the health supervision of young children, services for handicapped children generally and specifically for those with cerebral palsy, cleft lip and cleft palate, dento-facial handicaps, vision problems, and hearing impairment. Four other projected guides in the series on services for children with handicapping conditions—epilepsy, orthopedic defects, emotional disturbances, heart disease and rheumatic fever—are being prepared for expected publication in 1958, with the one on diabetics held in abeyance for the time being.

## Standing Committees Look Ahead

What I have said about Program Area Committees applies with equal truth to the Standing Committees. The new committees have been appointed, and several have or will hold meetings shortly.

### Evaluation and Standards

The newly named Committee on Evaluation and Standards, Berwyn F. Mattison, M.D., chairman, has had one meeting since it was organized. In general, it has continued the activities of the old Committee on Research and Standards, and has expressed its intention of moving into the field of evaluation.

Special mention should be made of several of the subcommittees working under the Committee on Evaluation and Standards. Working jointly with representatives of the New York State Health Department the Subcommittee on the Care of Cases of Communicable Diseases in General Hospitals has revised the Health Department publication "Guide for the Control of Communicable Diseases in General Hospitals." The

revised report is now available. Material is now being assembled for another volume covering the control of nutritional diseases. The Subcommittee on Health Aspects of Air Pollution participated in the preparation of an "Annotated Bibliography, the Effects of Atmospheric Pollution on the Health of Man, 1957," published by the Kettering Laboratory of the University of Cincinnati. The Subcommittee on the Hygiene of Housing has been carrying on a limited program acting under the latest grant of the Milbank Memorial Fund. Requests for additional financial support have been made to several organizations, and it is hoped that in the near future this will be granted. A special Subcommittee on Poultry Inspection and Sanitation, authorized by the Executive Board, was organized for the purpose of preparing a statement of principles for setting up a poultry sanitation inspection program by state or local health departments. Under the chairmanship of Henry E. Holle, M.D., this subcommittee completed its task in record time. The report is in the hands of the Committee on Evaluation and Standards for further consideration so that it may be presented to the Governing Council for action and adoption as an Association policy.

### *Coordinating Committee on Laboratory Methods*

This committee and its eight subcommittees have been at work, and several are approaching the point where the results of their efforts are evident. A draft report has been prepared by the Subcommittee on Laboratory Examination of Shellfish, which will bring up to date the earlier report, now out of print. A manuscript on Methods for the Microbiological Examination of Foods has been submitted by the subcommittee of the same name. It will probably be published in 1958. The Subcommittee on Standard Methods for the Examination of Dairy Products is working toward a revision of the 10th edition of "Standard Methods for the Examination of Dairy Products" to be published probably in 1960. Similarly, activities have been initiated toward the publication of the 11th edition of "Standard Methods for the Examination of Water, Sewage, and Industrial Wastes" by the subcommittee concerned with this area. A new feature will be a separate section on radioactive measurements. Publication is anticipated in 1960.

### Committee on Professional Education

The Committee on Professional Education has continued its record of distinguished achievement under its chairman, Philip E. Blackerby, Jr., D.D.S.

The Professional Examination Service continues to be the largest unit in the Association's budget. Having reached the age of 16, the PES can now take a long backward look at itself. This inspection provides satisfactions as well as dissatisfactions, and has its greatest utility in setting our sights for the future.

The past decade is particularly valuable for review since it spans the period of the Annual Service Plan, instituted in 1948. The plan offers governmental agencies unlimited examination services for an annual fee. The purpose of the procedure is: (1) to encourage states to use the Professional Examination Service examinations for all positions for which material has been prepared and thus extend the advantages of scientific testing methods to as many public health workers as possible; (2) to develop a service that could be offered at an acceptable price through examinations suitable in many agencies; (3) to overcome the resistance to the use of examinations for only a few candidates since the use of standard examinations by many agencies makes it possible to provide norm data against which to evaluate any agency's few candidates;

and (4) to improve the quality of examinations in public health by making it possible to have statistical evaluation of the test. This has been made possible by offering a free scoring and analysis service to agencies in return for making results of the examinations available to the Professional Examination Service. It is a satisfaction to know that this plan has made it possible for the Professional Examination Service to increase each year the quality and quantity of its service.

It is a long jump from 1947 to 1957 but here are some of the measures of the distance:

| | 1947 | 1957 |
|---|---|---|
| Total budget | $37,400 | $200,000 |
| Number of: | | |
| Employees | 9 | 24 |
| Available items | 20,000 | 70,000 |
| Standard examinations | 100 | 850 |
| Health fields covered | 12 | 20 |

In the first six months of 1957, 36,000 copies of examinations were delivered to various agencies for 10,000 different candidates.

Perhaps most significant is the great increase in the kinds of organizations using the services. In 1947, state and city health departments, the Division of Commissioned Officers of the Public Health Service, and schools of public health and of public health nursing comprised the list of consumers. To this list can now be added: the American Board of Preventive Medicine, Inc.; the American College of Hospital Administrators; 35 licensing boards in 24 states in the fields of medicine, veterinary medicine, laboratory sciences, nursing, osteopathy, physical therapy, psychology and pharmacy; the American Sanitary Engineering Inter-Society Board; the American Physical Therapy Association; the Communicable Disease Center of the Public Health Service; the Health Insurance Plan of New York; and others. All this means that the American Public Health Association through its Professional Examination Service is now affecting the careers of thousands of health workers every year.

The history of the past decade is interesting from another viewpoint. During this time the Professional Examination Service evolved from a completely subsidized to a completely self-sustaining program. In 1947, all of its funds were derived from federal and foundation sources, viz., the U. S. Public Health Service, the U. S. Children's Bureau, and the National Foundation for Infantile Paralysis. In 1957 all of its funds come from the federal, state, and city agencies, the licensing boards and the professional organizations which use its services. This transition was largely the result of the success of the Annual Service Plan.

To say that the major problem of PES is financial is simply to echo a general condition! The specific form this ogre takes for the Professional Examination Service is the struggle to keep acceleration of income up to acceleration of requests for services, and, build up resources for the research and development which is a goal for the future.

### *Recruitment Study*

Recruitment of public health workers remains one of the most pressing problems as we look ahead. It is important, therefore, to note the research project concerned with this area now under way at the Universtiy of North Carolina, under a grant from the National Institutes of Health, and with the active cooperation of our Committee on Professional Education. Robert E. Coker, M.D., is the director of the study, and staff has been appointed. Interview questionnaires have been prepared and pretested in two medical schools. The questionnaire interviews have started in

a representative sample of all the medical schools in the country. The rosters of present and previous public health physicians needed to carry out a second part of the study, as to why physicians have entered or left public health, have been practically completed.

#### *Educational Qualifications*

During this year the committee accepted for publication as a proposed report the statement on Educational Qualifications of Executives of Voluntary Organizations and Health Councils. The committee also accepted the statement on Educational Qualifications and Functions of Public Health Educators, and voted to recommend the report to the Governing Council for adoption.

#### *Accreditation*

The committee recommended to the Executive Board that the schools of public health accredited for the academic year 1956–1957 be reaccredited for the year 1957–1958 and for the same degrees. A list of the accredited schools was published in the July issue of the American Journal of Public Health. Wilson G. Smillie, M.D., is the consultant on accreditation.

#### Research Policy

The new Standing Committee on Research Policy, under the chairmanship of Thomas D. Dublin, M.D., has had one meeting, and is now in the process of formulating and organizing a program of action. It is already clear that this plan will need reconciliation with the programs of other new committees. This is particularly true with relation to the Committee on Evaluation and Standards and the Committee on Public Health Administration.

#### Public Policy and Legislation

The Committee on Public Policy and Legislation, whose chairman is Clarence W. Klassen, has not yet had a meeting, but committee members have been exploring ways by which they can carry out the recommendations of the Task Force to expedite adoption by the Association of an official position on the principles relative to matters of public policy, keep the membership informed of current legislative developments, and establish machinery by which to bring the influence of the Association to bear upon legislative and policy matters. The committee, for example, is blocking out those areas of public policy on which the Association should have an official position and develop a statement on policy principles. Also being studied are procedures of various national organizations in handling national and state legislation. The committee believes that the Association cannot remain aloof from its obligation to the national health picture and that it must assume an active and aggressive role in the field of national public health policy, particularly in respect to legislation, both of its own initiation and that suggested by others.

#### Affiliated Societies and Branches

The creation of a Standing Committee on Affiliated Societies and Regional Branches indicates the concern of the Governing Council with the development and strengthening of affiliates. A former Ad Hoc Committee had done much in bringing about a close relationship between the APHA and its Affiliated Societies and Branches. Last year, five more states became affiliated to make a total of 41 societies and two branches. Three additional states have now applied for affiliation. The new Standing Committee, chaired by Malcolm H. Merrill, M.D., has undertaken the task of finding further means of vitalizing the relationship between the states and the Association. To further the goal of closer contact between affiliates and officers and staff an organized endeavor was undertaken in 1957.

During World War II a scheme was developed to bring closer to public health workers in the western United States some of the information and stimulation they might receive from an APHA Annual Meeting. This was accomplished through a visiting team of speakers. This successful venture was repeated in 1957 at the request of several western states. The Association organized a team of speakers who traveled on a circuit, attending 10 state meetings and the Western Branch. The entire month of May was given over to these visits. Total attendance at the 11 meetings was in excess of 3,000 persons. The team was led by the President, Dr. Knutson, and its visits were made possible through the cooperation of the Public Health Service, the National Heart Institute, the University of Michigan School of Public Health, the Equitable Life Assurance Society, and the British Information Services.

Of those attending the meetings it is conservatively estimated that fewer than 10 per cent find it possible to attend a national meeting of the APHA. The appreciation expressed for the contribution by the visting speakers to these state and branch meetings was gratifying to those who organized the circuit. The plan for this circuit-riding team was approved by the Committee on Affiliated Societies and Branches as a part of the continuing effort to bring more services and better communication to the Affiliated State Societies and Branches. Undoubtedly, much remains to be done, but progress is evident and there is rich promise for the future.

### Association Membership on the Rise

The news of the year with regard to membership is good and encouraging. The good news can best be reported in numbers: 1,170 applicants have been elected to membership since September 1, 1956. This continues the upward swing from the 1,009 figure reported for the same period last year and 881 for the year before. The Committee on Eligibility will report Fellowship applications topping last year's high of 227 by three. Sustaining Members have been increased by five, making a total of 52. Among the new ones is Procter and Gamble with annual dues of $1,000. As of September 1, 1957, the total membership was 12,881.

This climbing curve is due in part to the response evoked by eight major membership promotions, including a mailing to 738 former ICA participants. Of a total of 4,721 letters of invitation sent out during the year, there were 475 acceptances.

Increased Section activity also accounts, in part, for the changing membership picture. Several Sections, working with the Membership Department, sent invitations to become members to 447 persons. The result was 76 new applicants for the APHA. During the past year, all 14 Sections were busy circulating news to their members. Thirty-two Section Newsletters achieved a total circulation of 27,998.

In keeping with the expansion program of the Association, future plans in the area of membership will aim at having every person in the public health profession as a member of the American Public Health Association.

### Agency Membership

Another committee was appointed by the Executive Board this year to study the newly proposed type of Agency Membership. The Ad Hoc Committee on Agency Memberships, chaired by Milton Terris, M.D., at its meeting in May, 1957, stated that Agency Memberships should be open to state and local official and voluntary organizations engaged in public health work or other

programs having a close relationship to health services. The addition of this type of membership was voted upon in August by the entire membership.

## The American Journal of Public Health

Discussion of communication with members leads naturally to the voice of the Association, the Journal. The 47th volume of our official publication is nearing completion. Nineteen hundred and fifty seven saw the passing of two great public health leaders: Charles-Edward Amory Winslow, Dr.P.H., and Haven Emerson, M.D., and the Journal paid fitting tribute to their activities and achievements. Notable also was the publication of a Symposium on Measuring the Risk of Coronary Heart Disease in Adult Population Groups, which had been presented at the Annual Meeting in November, 1956.

The year was marked by a number of changes in the leadership of the Journal. Abel Wolman, Dr.Eng., who had assumed the responsibility of guiding the Journal when Professor Winslow was compelled to give up this task, resigned as editor in July. Despite numerous other heavy responsibilities, Professor Wolman made his impress on the editorial policies of the Journal, and it is no more than fitting that we express warm appreciation of his efforts. The resignation of Professor Wolman was followed by that of Raymond S. Patterson, Ph.D., who had served as associate editor since 1954. Raymond Patterson's contribution in preparing the Annotated Bibliography has been widely appreciated by thousands of Journal readers, and it is a pleasure to report that he agreed to continue to prepare this popular feature. Our cordial thanks go out to Dr. Patterson for his work as associate editor. On August 1, 1957, George Rosen, M.D., assumed the editorship of the American Journal of Public Health. He has served as a member of the Editorial Board since February, 1948, and most recently as chairman of the Board. Dr. Atwater again served as managing editor. John D. Porterfield, M.D., chairman of the Editorial Board during the first half of 1957, was succeeded in August by Granville W. Larimore, M.D. Two new members of the Board are John J. Hanlon, M.D., and Perry F. Prather, M.D.

Under its new leadership, the Editorial Board has felt that the time had come for a new look at the Journal. While continuing to maintain the high standards that have characterized the Journal for many years, it is also necessary to look ahead and see how the Journal can best serve the needs of the Association and its members, and of public health in general in the years to come.

With this objective the Editorial Board is now examining the Journal in terms both of content and format. The October Journal carried a statement by the Board to the readers requesting their participation and offering channels for the communication of their views to the Editorial Board. At the same time, technical experts on typography and format have been consulted to derive the greatest benefit in these areas. Imbued with a vision of the creative possibilities that lie ahead for the public health profession, the Journal will endeavor to represent the broad spectrum of health interests and at the same time be sensitive to the germinal areas, the significant areas of development where growth is taking place.

## Financial Situation

It is evident that while there have been substantial increases in the Association budgets over the past few years, it has not been possible to keep up with the demands addressed to the Executive

Board for new activities or expansion of previously established projects. As a result the Board is compelled to make choices among a multiplicity of projects and requests in order to initiate new activities and undertakings. The avoidance of deficits, however, seems a clear indication that good judgment has prevailed.

It is important to note that only slightly more than half of the total budget of $652,950 has come from continuing, relatively unchanging sources. These include membership dues, advertising, publications, and exhibits. The remainder must be raised through special grants, most of which are of short duration. I have already pointed out that the income derived from membership dues must be quadrupled from other sources every year in order to carry on the present services to public health workers. Perhaps better than any other, this fact highlights the problem that confronts the Executive Board every year. It is this situation that increases our gratification at the support received from a number of agencies.

On behalf of the Executive Board and the entire Association we gratefully acknowledge support from the Ittleson Family Foundation, the Albert and Mary Lasker Foundation, the W. K. Kellogg Foundation, the Rockefeller Foundation, the New York Foundation, and the Milbank Memorial Fund.

The generosity of these organizations has made possible a number of projects that have substantially enriched and advanced the field of public health.

A sizable part of our income has been obtained from the Sustaining Members of the Association, from advertisers in the Journal, and from technical exhibitors. On behalf of the Association, I wish to express to them our thanks and appreciation. From these sources have come funds that have been particularly useful in meeting needs in the Association budget, owing to their flexibility.

Once again, I wish to emphasize that the Executive Board, the Association staff, and many others are continually exploring further sources of funds for the great variety of activities that are of concern to public health. The relevance of this point to the achievement of Task Force objectives has been defined, and I need only underscore it here.

## Preparedness for New Responsibility

Joshua Reynolds once commented that "though a man cannot at all times and in all places paint or draw, yet the mind can prepare itself by laying in proper materials at all times and in all places." This thought may be carried one step further with a remark made by Louis Pasteur to his students in 1850 that "chance favors only a mind which is prepared."

Both statements aptly characterize our situation. We are in a process of transition. We are endeavoring to move ahead into a future whose outlines can be seen, but as through a glass darkly. We have great expectations for the new developments and challenges that move up to confront us, but our success will depend in large measure on the degree to which we are prepared to cope with the unexpected as well as the expected. On us lies the responsibility and in meeting it we shall have the satisfaction and exhilaration of participating in a great human adventure.

In this report I want to thank Dr. Reginald M. Atwater, executive secretary, and his staff for their fine work without which these accomplishments would not have been achieved. Dr. Atwater carried on even during his illness. The best evidence, I believe, that the staff is "tops" is the way they came through in Dr. Atwater's absence. It is to the staff organized under Dr. At-

water's leadership, as well as to Dr. Atwater, that I want to extend my sincere tribute and thanks.

It has been a pleasure to serve as chairman of the Executive Board at this time. My fellow members on the Board will share with the other members of the Governing Council satisfaction in the progress reported and in the evidence that we are thinking, that we are preparing our minds so that we can act intelligently when the need arises. We have great expectations for further progress and greater service in public health through the American Public Health Association. The future is in our hands and may the outcome be a happy one.

LAWRENCE J. PETERSON, M.S.P.H. *
Chairman

* Deceased.

## Panum on Culture and Mental Disease

Since it has been proved that the frequency of mental diseases is generally in direct proportion to civilization and its accompanying social collisions, it might be surmised that these diseases are extremely rare on the Faroes, inasmuch as civilization has certainly not attained a high degree there, and the social collisions so agitating to the mind, under the patriarchal conditions which prevail, are proportionately very few. But on the contrary, there is hardly any other country, or indeed any metropolis, in which mental diseases are so frequent in proportion to the number of people as on the Faroes.—Peter Ludwig Panum. "Observations Made During the Epidemic of Measles on the Faroe Islands in the Year 1846."

# CLEARING HOUSE ON PUBLIC HEALTH SALARY INFORMATION AND PERSONNEL NEEDS

## Physical Therapy Recruitment Piece

"Physical Therapy: A Career of Science and Service" is a vocational guidance manual prepared by the American Physical Therapy Association. It is addressed to counselors and designed as an aid in counseling sessions and related activities. In a convenient large type ring binder the facts about physical therapy—its function, opportunities, educational and personal requirements, and its rewards are described. The practitioner of this "cornerstone of rehabilitation . . . will reap the rewards of service, satisfaction and security as he helps others to help themselves."

Included in a packet is a poster, a brief descriptive pamphlet about physical therapy, another listing sources of financial assistance for students, a sheet of career facts (there are now 7,800 qualified physical therapists but 13,600 are needed), a list of approved physical therapy training programs, a directory of physical therapy chapters, and flyers describing, respectively, "Within Your Hands," a film about physical therapy, and "Physical Therapy: A Career of Science and Service," a color film strip. And finally a very convenient order blank for ordering the items in the packet, which are free.

American Physical Therapy Association, 1790 Broadway, New York 19.

## Voluntary and Official Salaries

The Community Council of Greater New York has recently published "Salaries and Related Personnel Practices in Voluntary Social and Health Agencies, New York City." The study is related primarily to social workers rather than to the whole galaxy of workers in social and health agencies. For example, only hospital social service departments are included, not the entire hospital staff.

The study is based on 154 returned questionnaires from voluntary agencies of 304 sent to agencies in seven main categories—child welfare, coordinating and planning, group work and recreation, health, hospital social service departments, multifunctional and family service, and rehabilitation and guidance.

Salaries for comparable positions were reported by the New York City Department of Personnel, and for comparable clerical positions by the Commerce and Industry Association of New York.

As indicated by "Better Times," the Community Council's weekly news sheet, "Persons in similar positions, or positions requiring similar training, in voluntary health and welfare agencies . . . receive widely varying salaries and other benefits."

Among other findings are that in general voluntary agency salaries are lower than those in official agencies but that they also have a wider range, that clerical salaries in voluntary agencies are lower than in commercial firms.

"Because of the great community interest," it is reported that a comparable salary survey will be made annually, broadening the coverage and refining the technics and analyses. Community Council of Greater New York, 44 East 23rd St., New York 10; $1.00.

## Suggesting a Laboratory Career

The Bureau of Laboratories of the Maryland State Health Department has published a two-color folder entitled "Students: if you like science how about a laboratory career?" It has been distributed to health officers in the state

to be used to interest high school students in careers in public health, hospital, or private laboratories.

In his covering letter C. A. Perry, M.D., director of state laboratories reports that he has for more than a year been unable to fill two positions in the department, respectively for a principal chemist and for a junior bacteriologist to be trained in cancer cytology. He expects it to be increasingly difficult to find college graduates at any level for medico-public health laboratories.

A desire to be of service, professional standing, a satisfying life work, and equal opportunities for men and women are among the pluses suggested for a laboratory career. In sending the pamphlet to the Clearing House, Dr. Perry gives credit largely to California. Perhaps readers will be able to get both the Maryland and California leaflets.

## New York State Training Fellowship

The New York State Health Department is distributing a leaflet describing its training fellowship program for "specialists in preventive medicine." For physicians who are American citizens, were graduated from an approved medical school, served internship in an approved hospital and are eligible for medical license in the state, it provides two years of training with guarantee of employment upon completion of training. During a year of approved residency in state and/or local health department and an academic year at a school of public health a monthly stipend of $500 is provided, along with tuition fees and other expenses at the school and travel expenses in the residency and to and from the school.

Further information from Director of Professional Training, New York State Department of Health, 84 Holland Ave., Albany.

## Illinois Public Health Salaries

The Illinois State Health Department is distributing its annual "Average Salaries of Full-Time Employees of Local Health Departments in Illinois" (outside of Chicago). Thirteen occupational groupings are included with Sanitarian III appearing for the first time.

The tabulation (as of July 1, 1957) shows average and minimum and maximum salaries for 430 workers—271 in county and 159 in city health departments. Nurses make up 44 per cent of the total, clerks 25 per cent, and sanitation personnel 20 per cent.

The one-page summary is available from Dr. Charles F. Sutton, Deputy Director, Division of Local Health Services, Illinois Department of Public Health, Springfield.

# ASSOCIATION NEWS

## Behavioral Sciences Study Grant

The Association is undertaking a three-year study of public health and the behavioral sciences under the general direction of George Rosen, M.D., professor of public health education, Columbia University School of Public Health and Administrative Medicine. The study is made possible by a grant from the National Institute of Mental Health of $20,125 annually for three years.

Serving the study in an advisory capacity will be a Joint Committee on Common Ground Between Public Health and the Behavioral Sciences, with representatives each of the American Anthropological, Psychological, and Sociological Societies, and the APHA.

Among the aims of the study are learning about the factors involved in group behavior and planning the application of such knowledge to improved health protection and improvement. For example, why do groups reject certain advances in health protection, like water fluoridation or immunization against polio; how can a knowledge of ethnic and cultural factors aid in persuading people to protect themselves and their families against chronic disease?

## Executive Board Meets February 20–21

The Executive Board of the Association meets in New York City on February 20 and 21. This will be the first meeting of the Board since the new Executive Secretary, Berwyn F. Mattison, M.D., took office.

At this time the budget for the year will be adopted, committee memberships completed, priorities established for additional staffing of the Association to carry out the expanded program made possible by W. K. Kellogg and Rockefeller Foundation grants and the Public Health Service grant for the behavioral sciences study. Further planning for agency membership and for developing closer relationships with Affiliated Societies and Branches is on the agenda. There will also be a report of the Program Committee which will have met a week earlier on February 13 and 14 to begin planning for the 86th Annual Meeting in St. Louis, Oct. 27–31.

The nine members of the Executive Board are the President, President-Elect, and Treasurer and six members elected by the Governing Council. At its organizing meeting in Cleveland the Board selected John D. Porterfield, M.D., Deputy Surgeon General of the Public Health Service, as its chairman for the coming year.

## The Rising Cost of Living

Just because we were so busy with the new cover and new layout of the January Journal, we failed to print the new prices on the Contents Page.

The subscription price should read: $12 per year for the United States, elsewhere $13 to cover postage and handling. Single copies $1.25 postpaid.

## Food Fallacies Up to Date

The Committee on Nutrition Information of the Food and Nutrition Section, APHA, recommends the leaflet, "Food Facts Versus Food Fallacies," to the attention of all who are interested in improved health. This pamphlet, issued recently by the Food and Drug Administration, is available from the FDA, Washington 25, D. C.

**APHA membership application blank on page XXV**

# NEWS OF AFFILIATED SOCIETIES AND BRANCHES

## Mississippi Association Meets

The 21st annual meeting of the Mississippi Public Health Association was held in Jackson, December 4–6, 1957. Among the chief subjects discussed were the new aspects of environmental health and mental health as a part of public health. As a part of the latter subject, Veronica Pennington, M.D., of the State Mental Hospital at Whitfield, gave the highlights of her four-year study of the use of modern drugs with mental patients. She had previously summarized her findings at the recent International Congress on Psychiatry in Switzerland.

Roy J. Morton, president of the APHA and radioactive waste disposal specialist at the Oak Ridge National Laboratory, spoke on "Some Evolving Opportunities in Public Health" and brought greetings of the parent Association. Louise Holmes, director of nursing of the State Health Department, as MPHA's delegate, made an enthusiastic report of the 85th Annual Meeting of APHA in Cleveland in November. "It must have been a big success," according to her audience. All told 36 Mississippi specialists in various fields were on the Jackson program.

J. E. Johnson, director of the State Health Department's Division of Sanitary Engineering, succeeded Marie Jordan, R.N., supervisory nurse, Hinds County Health Department, in the presidency.

Other officers elected are:

President-Elect—B. D. Blackwelder, M.D., director, Forrest County Health Department
Vice-President—Marie Jordan, R.N.
Secretary—H. E. Boone, health program representative, State Board of Health
Treasurer—T. W. Williamson, director of finance and accounts, State Board of Health

## Three New State Affiliates Added

The Governing Council at the 85th Annual Meeting accepted three new State Affiliates—the Alabama, Kentucky, and Maryland Public Health Associations, the last-named subject to certain provisions still to be met. This brings the total to 44 Affiliates in 42 states and two regional Branches.

The Alabama Association has more than 500 members, including 86 per cent of all the APHA members in the state. Its president is George A. Denison, M.D., health officer of Birmingham-Jefferson County.

The nine-year-old Kentucky Public Health Association has about 800 members. Its president is Edgar E. Hume, Jr., of the State Health Department.

Maryland has a membership of about 600. President is William W. F. Warthen, M.D., health officer of Baltimore County.

# APHA AFFILIATED SOCIETIES AND BRANCHES

SOCIETY AND SECRETARY

ALABAMA PUBLIC HEALTH ASSOCIATION, George V. Truss, P. O. Box 2591, Birmingham 2
ARIZONA PUBLIC HEALTH ASSOCIATION, Goldie Gold, Maricopa County Health Dept., Phoenix
ARKANSAS PUBLIC HEALTH ASSOCIATION, Mrs. Vada Russell, State Health Dept. Bldg., Little Rock
CALIFORNIA, NORTHERN, PUBLIC HEALTH ASSOCIATION, Emanuel H. Pearl, 2220 Moorpark Ave., San Jose 28
CALIFORNIA, SOUTHERN, PUBLIC HEALTH ASSOCIATION, Bryon O. Mork, M.D., University of California at Los Angeles, Los Angeles
COLORADO PUBLIC HEALTH ASSOCIATION, Margaret D. Lewis, 659 Cherokee St., Denver
CONNECTICUT PUBLIC HEALTH ASSOCIATION, E. Louise Ratcliff, M.P.H., Griffin Hospital, Derby
CUBAN PUBLIC HEALTH SOCIETY, Dr. Raphael Calvo Fonseca, Calle 19 No. 511 Altos Vedado, Havana
FLORIDA PUBLIC HEALTH ASSOCIATION, Nathan J. Schneider, Ph.D., P. O. Box 210, Jacksonville
GEORGIA PUBLIC HEALTH ASSOCIATION, Carl Fox, 33 Pryor St., N.E., Atlanta
IDAHO PUBLIC HEALTH ASSOCIATION, Wesley O Young, D.M.D., P. O. Box 640, Boise
ILLINOIS PUBLIC HEALTH ASSOCIATION, William J. Hixon, Evanston Health Dept., Evanston
INDIANA PUBLIC HEALTH ASSOCIATION, Hester Beth Bland, 1330 W. Michigan St., Indianapolis
IOWA PUBLIC HEALTH ASSOCIATION, Mary L. Wombacher, State Dept. of Health, Des Moines
KANSAS PUBLIC HEALTH ASSOCIATION, Evelyn Ford, State Board of Health, State Capitol, Topeka
KENTUCKY PUBLIC HEALTH ASSOCIATION, Mrs. Rosalie Walters, 620 S. Third St., Louisville 2
LOUISIANA PUBLIC HEALTH ASSOCIATION, Mrs. Lucille Sawyer, Shreveport
MASSACHUSETTS PUBLIC HEALTH ASSOCIATION, Mrs. Elizabeth K. Caso, Dept. of Health, Cambridge
MICHIGAN PUBLIC HEALTH ASSOCIATION, Maurice J. Mayer, 405 Hollister Bldg., Lansing
MINNESOTA PUBLIC HEALTH CONFERENCE, D. S. Fleming, M.D., State Dept. of Health, University Campus, Minneapolis
MISSISSIPPI PUBLIC HEALTH ASSOCIATION, H. E. Boone, P. O. Box 1700, Jackson
MISSOURI PUBLIC HEALTH ASSOCIATION, Mrs. Nadia Craver, 5th Fl., State Office Bldg., Jefferson City
MONTANA PUBLIC HEALTH ASSOCIATION, Emma Wright, Box 811, Harve
NEBRASKA PUBLIC HEALTH ASSOCIATION, Matilda McIntire, M.D., Omaha-Douglas County Health Dept., Omaha
NEW MEXICO PUBLIC HEALTH ASSOCIATION, Robert Howell, 305 Terrace Ave., N.E., Albuquerque
NEW YORK CITY, PUBLIC HEALTH ASSOCIATION OF, Joseph Kadish, 164 W. 174th St.
NEW YORK STATE PUBLIC HEALTH ASSOCIATION, Mary C. Egan, State Dept. of Health, 333 E. Washington St., Syracuse 2, N. Y.
NORTH CAROLINA PUBLIC HEALTH ASSOCIATION, R. W. Brown, Bucombe County Health Dept., Asheville
NORTH DAKOTA PUBLIC HEALTH ASSOCIATION, Jean E. Norton, R.N., Box 133, Bismarck
OHIO PUBLIC HEALTH ASSOCIATION, Virginia Jones, Ohio Dept. of Health, Dayton
OKLAHOMA PUBLIC HEALTH ASSOCIATION, Marjorie Butler, 3400 North Eastern, Oklahoma City
OREGON PUBLIC HEALTH ASSOCIATION, T. M. Colasuonno, M.D., State Board of Health, Portland
PENNSYLVANIA PUBLIC HEALTH ASSOCIATION, Robert H. Conn, 303 N. Second St., Harrisburg
PUERTO RICO PUBLIC HEALTH ASSOCIATION, Margarita Martinez, Apartado 211, San Juan 2
SOUTH CAROLINA PUBLIC HEALTH ASSOCIATION, Laura M. DeMarse, State Health Dept., Columbia
SOUTH DAKOTA PUBLIC HEALTH ASSOCIATION, Louis E. Remily, State Dept. of Health, Pierre
TENNESSEE PUBLIC HEALTH ASSOCIATION, C. B. Tucker, M.D., State Dept. of Health, 420 Sixth Ave., N., Nashville
TEXAS PUBLIC HEALTH ASSOCIATION, Wayne H. Garrett, City Hall, Fort Worth
UTAH PUBLIC HEALTH ASSOCIATION, Mrs. Virginia Cole, City Health Dept., 115 S. State St., Salt Lake City
VIRGINIA PUBLIC HEALTH ASSOCIATION, William A. Dorsey, P. O. Box 2088, Richmond
WASHINGTON STATE PUBLIC HEALTH ASSOCIATION, Kathleen Burwell, R.N., State Dept. of Health, Smith Tower, Seattle
WEST VIRGINIA PUBLIC HEALTH ASSOCIATION, Paul B. Shanks, State Health Dept., Charleston
WISCONSIN ASSOCIATION FOR PUBLIC HEALTH, Paul Weis, 1 W. Wilson St., Madison
SOUTHERN BRANCH, A.P.H.A., Mary Irene Cummins, Box 323, Harriman, Tenn.
WESTERN BRANCH, A.P.H.A., Mrs. L. Amy Darter, State Dept. of Health, 2151 Berkeley Way, Berkeley, Calif.

# EMPLOYMENT SERVICE

The following pages present information for those seeking public health personnel and for those seeking positions in public health. Other information concerning vacancies and personnel available is on file in the Association office. Anyone wishing to have the benefit of this additional information can obtain it by writing to the Vocational Counseling and Placement Service of the Association.

Advertising space in these pages is available at special rates for the use of employers or individuals. The charges are $5 for the first 50 words or fraction thereof and $1 for each additional 10 words or fraction thereof. There is no charge to members or Fellows of the Association who desire to utilize the **Positions Wanted** portion of these pages. **Closing date** for receipt of advertisements is the first of the month preceding the desired month of publication. **All correspondence should be sent to the American Public Health Association, 1790 Broadway, New York 19, N. Y.**

## POSITIONS AVAILABLE

**Physician**—for large county health department. Salary $713–$786 a month. Excellent opportunity for broad public health experience in progressive agency. Permanent civil service position with sick leave, vacation, and retirement benefits. Write County Civil Service, 403 Civic Center, San Diego, Calif.

**Chief, Division of Food and Sanitation**—in health department of progressive Midwest city of 60,000. Responsible for slaughterhouse regulation, meat and milk inspection, and environmental sanitation. D.V.M. degree and public health experience required. Salary range $6,696–$7,896. Retirement plan and Social Security, and liberal hospitalization, sick leave, and vacation benefits. Write E. E. Bertolaet, M.D., Director of Health, City Hall, Kenosha, Wis.

**Tuberculosis Control Officer**—District of Columbia Department of Public Health. Qualifications: Licensed physician, experience in field of tuberculosis control. Public health degree desirable but not mandatory. Salary GS-14, $11,395. Federal government leave and retirement privileges. Position immediately available. Apply Director of Public Health, District of Columbia, Municipal Center, Washington 1, D. C.

**Public Health Dentist**—Outstanding opportunity to become associated with one of the nation's leading public health dental programs. The Philadelphia Department of Public Health is now accepting applications for the position of Public Health Dentist I until March 10, 1958. Duties include assisting director of the Division of Dental Health in the development, planning, and administration of a city-wide dental health program emphasizing the care and treatment of children's teeth. Salary is open to qualified persons. Please indicate minimum salary desired in replies. Liberal health and welfare benefits. Requirements: Graduation from an accredited school of dentistry, including completion of courses in pedodontia and an M.P.H., and two years of experience in dentistry, one year of which shall have included experience in a supervised public health dental program. Additional information and an application form may be obtained by contacting J. M. Wisan, D.D.S., Director, Division of Dental Health, Philadelphia Department of Public Health, 527 City Hall Annex, Philadelphia 7, Pa.

University of British Columbia, Vancouver 8, B. C., Canada, requires a full-time **Staff Member in Preventive Medicine** in the Faculty of Medicine. Applicants should be graduates in medicine with interest in epidemiological investigation. Salary and academic rank commensurate with training and experience. Address inquiries to Dr. James M. Mather, Professor of Public Health.

**Public Health Physician**—for established city health department with staff of 23. To direct and supervise all activities of the public health department and perform related work required. M.D., M.P.H., and three years of experience in public health required. Eligible for a license in Wisconsin. Civil service status, 40-hour week, vacation, sick leave, medical and hospitalization insurance, social security and pension plan. Salary range $10,200–$12,000. Apply Robert Baker, Manager, City Hall, Kenosha, Wis.

**Public Health Physician (District Health Officer)**—State of Wisconsin. Two positions. One position includes 11 counties in north central part of state, headquarters Rhinelander. Second position includes eight counties in area bordering Lake Michigan, north of Milwaukee, headquarters Fond du Lac. Act as medical administrator of district office; district epidemiologist; plan, organize, supervise work of district office personnel consisting of public health engineer, public health nurse, sanitarians, nutritionist, dental hygienist. M.P.H. degree plus three years' experience in public health administration; eligibility for a license in Wisconsin. Salary $11,592–$14,412 per year, plus travel allowance. Civil service, vacation, sick leave, Social Security, retirement benefits. Write Carl N.

Neupert, M.D., State Health Officer, 400 State Office Bldg., Madison 2, Wis.

**Health Commissioner**—City of 62,000. To direct and supervise all activities of the public health department and perform related work required. Graduation from recognized medical school; completion of approved internship and one year medical practice; and either one year public health training in approved public health school or three years' experience in public health administration required. Extensive knowledge of theory, principles, and practices of general and preventive medicine, public health and administration preferred. Civil service status, 40-hour week, vacation, sick leave, medical and hospitalization insurance for the entire family, retirement plan. Salary range $10,680–$11,880 plus $65 per month car allowance. Apply Civil Service Commission, 7525 W. Greenfield Ave., West Allis 14, Wis.

**Public Health Officers I, II, III**—I: Two years' experience as a physician, preferably in public health, and M.P.H. Salary $926. II: Three years' experience as a public health physician, of which one year must have been in an administrative capacity and M.P.H. Salary $966. III: Six years' experience as a public health physician, of which three years shall have been in an administrative capacity, M.P.H., and eligibility for certification by the American Board of Preventive Medicine and Public Health. Salary $1,066. **Mental Hygiene Nursing Consultant**—Five years' experience as a nurse, of which three years must have been as a public health nurse involving one year of teaching or supervisory responsibility; graduation from nursing school and college; completion of college program in public health nursing and advanced mental health nursing program. Salary at any interval within range of $434 and $496. Contact the following for applications and further information: Mr. Norman Sharpless, Department of Civil Service, 825 Mililani St., Honolulu 13, Hawaii.

**Health Commissioner**—The City of Roanoke, Va., has available a position as health commissioner. Salary range $8,820–$12,360 per year. Position carries pension plan, sick leave accumulative up to 90 days, and vacation accumulative up to 30 days. Retirement age 65. Forty-hour work week, excellent working conditions. Application to be made to Mr. A. S. Owens, City Manager, setting forth college training and experience in public health work.

**Medical Officer**—Pan American Sanitary Bureau, Regional Office of the World Health Organization, is seeking the services of a medical officer for a permanent appointment at its headquarters in Washington, D. C. The requirements for this post include a degree of doctor of medicine from a recognized medical school and a degree in public health; experience in communicable diseases control or eradication; fluency in English, Spanish, or Portuguese, with a working knowledge of one of the others. Attractive salary and allowances. For further details, write to Personnel Officer, PASB/WHO, 1501 New Hampshire Ave., N.W., Washington 6, D. C.

**Public Health Physician**—with interest and experience in mental health to be director of Bureau of Mental Health. Beginning salary up to $12,000. Please apply to Dr. Wilson T. Sowder, State Health Officer, Florida State Board of Health, P. O. Box 210, Jacksonville, Fla.

**Medical Health Officer**—for established rural county health department in central Illinois. Good personnel policies with vacation and retirement. Salary range $9,600–$12,000 for physician with public health training and experience. Contact W. T. Douglas, M.D., Hillsboro, Ill.

**Occupational Health Physician (Public Health Physician I, $10,954–$13,979)**—Assists director of Industrial Hygiene Division in organizing and administering a statewide occupational health program. Requirements: Certification or eligibility by the American Board of Preventive or Occupational Medicine. For applications or further information, please write Mr. Andrew L. McCabe, Personnel Director, Pennsylvania Department of Health, P. O. Box 90, Harrisburg, Pa.

**Public Health Nurse**—Position available in Miami with State Service for Crippled Children. Public health nursing preparation required. Orthopedic and/or pediatric nursing desired, but not required. Monthly salary range $360–$460. Annual salary increases, 40-hour week, liberal vacation and sick leave. Generous travel allowance. Covered by State retirement and Social Security. Apply to William R. Stinger, M.D., Florida Crippled Children's Commission, P. O. Box 1028, Tallahassee, Fla.

**Supervising Nurse**—for a generalized public health nursing program in a large health department which serves a population of over 300,000. Salary $4,557–$5,490. Other benefits include retirement plan, Social Security, insurance, paid vacation, and sick leave. Transportation furnished. Apply to Gertrude M. Hoogewind, Director of Nurses, Health Department, 303 Ionia, N.W., Grand Rapids, Mich.

**Supervisor**—Visiting Nurse Association, southeast central Pennsylvania. Town and rural service population serving approximately 150,000. Physical therapy at headquarters and in the field. Thirteen staff nurses, two physical therapists. Generalized public health service with some industry and nursery schools. Education for parenthood classes

and clinic for crippled children. Area highly industrialized and agricultural. Fifty miles from Baltimore, 90 miles from Philadelphia and Washington. Good personnel policies. Liberal salary dependent on qualifications. Write Director, V.N.A., 218 E. Market St., York, Pa.

**Dental Hygienist**—for established dental health program in well equipped, modern health department. Salary range $4,320–$5,400 per year, plus liberal travel allowance. Write to J. H. White, M.D., Director, Weld County Health Department, P. O. Box 521, Greeley, Colo.

**Public Health Nurse**—Salary range $391–$486; 37½-hour week. Car eight cents a mile. First increase one year. Must be eligible for California P.H.N. certificate. Agency located in upper Sacramento Valley near foothills of Sierra Nevada Mountains. Write G. L. Faber, M.D., M.P.H., Director, Butte County Health Department, P. O. Box 1100, Chico, Calif.

**Public Health Nurse**—Opening for Public Health Nurse II. B.S. degree plus one year experience in established health department. Salary range $360 per month to $450 per month, plus liberal travel allowance. Nurses without experience and with degrees and public health training can qualify as Public Health Nurse II after one year employment. Write to J. H. White, M.D., Director, Weld County Health Department, P. O. Box 521, Greeley, Colo.

**Public Health Nurse V (District)**—Skilled professional work in the public health nursing field, including consultative duties and direct services in several counties in Kansas. Salary range $395–$505 per month, plus reimbursement for traveling expenses. Starting salary $436 per month. Must be eligible for registration in Kansas. Baccalaureate degree, completion of one-year program of study in public health nursing and five years of nursing experience required. Write Miss Roberta Foote, Director of Public Health Nursing, State Board of Health, Fifth Floor, State Office Bldg., Topeka, Kans.

**Public Health Nurses in Health Department Program**—Monthly salary range for nurses with public health training $403.43–$450.45. Nurses without public health training may qualify while on the job; salary $357.18–$389.44. Transportation furnished, uniform allowance, liberal vacation, illness and pension benefits. Write to Miss Gertrude Mulaney, R.N., Superintendent of Nurses, Milwaukee Health Department, Milwaukee 2, Wis.

**Director of Public Health Nursing**—for bicounty health department carrying generalized nursing program in semirural area. Staff of eight nurses; salary range $439–$549, beginning step depending on education and experience, one-step increase at six months. Qualifications as set by State Department of Public Health. Apply L. S. McLean, M.D., M.P.H., Health Officer, Humboldt-Del Norte County Department of Public Health, P. O. Box 87, Eureka, Calif.

**Nutritionist**—Develop and conduct program on a state-wide basis for food service personnel in nursing homes. Bachelor's degree and considerable experience in dietetics. **Clinical Nursing Consultant**—to work with nursing service personnel on same program. B.S. in nursing and considerable responsible experience in hospital nursing required. Salary for each $360–$460 per month plus mileage and per diem, annual and sick leave, Social Security, retirement, other fringe benefits. Further information and application form may be obtained from Personnel Officer, State Health Department, State Office Bldg., Montgomery, Ala.

**Statistician**—West Virginia State Department of Health, Division of Maternal and Child Health. Qualifications require: (1) graduation from an accredited college or university; (2) minimum of one year of postgraduate study in a recognized school of public health with a major in biostatistics. Substitution for (2): major in statistics in undergraduate training with at least three years of statistical experience in a public health or medical setting. Salary range $4,800–$6,000. Position under merit system. Social Security and liberal vacation and sick leave. Write to N. H. Dyer, M.D., Director, West Virginia State Department of Health, Charleston 5, W. Va.

**Public Health Nursing Educational Director-Supervisor**—Challenging, rewarding opportunity. Expanding agency in university city. Liberal benefits and policies. NLN approved P.H.N. degree. Good salary. Visiting Nurse Association, 424 W. Jefferson St., Louisville 2, Ky.

**Public Health Nursing Positions**—Available in Health Department with the city of Flint, a rapidly growing city of 180,000 population. Beginning, intermediate, and administrative positions are available. Five-day, 40-hour week, with liberal retirement, vacation, and sick leave policies. Car furnished. Beginning salary rates: $3,952, $4,329, or $4,654, depending on experience and qualifications. Automatic increases and longevity rates for length of service. Apply Flint Civil Service Commission, City Hall, Flint, Mich.

**Public Health Nurses**—Livingston County, Mich., has need for two nurses with some training in public health to carry on a generalized public health nursing program in the county. Starting salary is $4,000 per year with travel. Personnel policies provide for vacation, sick leave, and Social Security. Write

Dr. A. B. Mitchell, Director, Shiawassee-Livingston District Health Department, Howell, Mich.

**Public Health Nurses** (salaries $335–$455) and **Graduate Nurses** ($275–$395) for generalized public health nursing in New Mexico Department of Public Health. Opportunities for advancement, retirement plan, and other fringe benefits. Write Merit System Supervisor, Box 939, Santa Fe, N. M.

**Public Health Nursing Positions**—Must be licensed or eligible for license in New York State; public health nursing preparation required; city health department generalized program; 35-hour week, vacation, sick leave, and retirement policies; present salary range $4,360–$5,580 plus longevity increments of $250 at the end of 10, 15, and 20 years of service. Write Chester A. Hicks, M.D., Director of Public Health, New Rochelle, N. Y.

**Public Health Nurses**—Beginning salary $4,440. **Graduate Nurses**—Beginning salary $4,020. Five-day work week from 8:30 a.m. to 4:30 p.m. Four weeks' vacation, 11 holidays, 12 days' sick leave annually. Pension plan. Generalized public health nursing agency founded by Lillian D. Wald. Ongoing inservice education program. Four universities offer opportunities for study at all levels. Some scholarship assistance available. For information, write or call Personnel Office, Visiting Nurse Service of New York, 107 East 70th St., New York 21, N. Y. Telephone Lehigh 5-1100.

**Public Health Nurse**—The City of Santa Barbara invites applications. Salary $358–$436. Generalized program in beautiful city, mild climate, desirable living. Qualified person may begin above basic salary. Write Helen Hart, M.D., Health Department, 2 de la Guerra Plaza, Santa Barbara, Calif., or phone Woodland 6-7171, ext. 40.

City of St. Louis, Missouri, has openings under the following classifications:

**Bacteriologist III**—$6,770–$8,227 per year.
**Laboratory Technician I**—$3,257–$3,959 per year.
**Medical Social Worker**—$4,157–$5,053 per year.
**Occupational Therapist I**—$3,959–$4,812 per year.
**Physician I**—$6,770–$8,227 per year.
**Public Health Nurse I**—$3,771–$4,583 per year.

Applicants must be United States citizens. Write to the Department of Personnel, City of St. Louis, Room 235, Municipal Courts Bldg., 14th and Market, St. Louis 3, Mo.

**Public Health Nursing Position**—in County Health Department serving rural-suburban population 90,000. Generalized service including school, bedside care. Field training center. Agency in college community near Cleveland. Salary range $4,140–$5,040. Public health nursing preparation required. Please write Miss Nancy McMurray, Nursing Director, Lorain County Health Department, Oberlin, Ohio.

**Public Health Nursing Consultant**—newly created position in expanding State Health Department. Responsibilities: preventive medicine and communicable disease control. Progressive personnel policies; lease car if desired. Social Security plus state retirement. Salary dependent upon qualifications. Write Miss Marian Chladek, Director, Division of Public Health Nursing, Wyoming Department of Public Health, State Office Bldg., Cheyenne, Wyo.

Open to citizens of the United States who possess the minimum qualifications:

**Medical Social Work Advisor** (Female)—$5,096–$6,136.
**Medical Social Worker** (Female)—$4,472–$5,356.
**Dietitian I** (Female)—$4,264–$5,096.
**Nurse Anesthetist** (Female)—$3,900–$4,680.
**Medical Technologist I**—$3,588–$4,264.

Write Personnel Director, Municipal Building, Hartford, Conn.

**Medical Social Worker**—San Francisco Public Health Department, Crippled Children's Program. Permanent civil service position. Entrance salary $400, maximum $480. Vacation and sick leave with pay. Medical care and retirement programs. Write to the Personnel Officer, 101 Grove St., San Francisco 2, Calif.

Opening available for **Medical Social Worker** to establish and have charge of Social Service Department in modern 150-bed general hospital serving a medical population of 50,000. Salary commensurate with training and experience. Liberal personnel policies. Apply to Norman R. Brown, Administrator, Concord Hospital, Concord, N. H.

**Chief Psychiatric Social Worker**—for Alabama's Commission on Alcoholism first outpatient clinic (Birmingham). Close tie-in with Medical College Department of Psychiatry. Person filling this job will have excellent opportunity for promotion as program expands. Retirement program and Social Security benefits. Salary open. Write to A.C.A., 8 No. Union St., Montgomery, Ala.

**Public Health Nutritionist**—Develop and conduct program in multiple county area including consultation to local health departments, teachers, nursing homes, children's institutions; general nutrition education program and community studies; training programs. Salary range $4,896–$5,976; travel reimbursed. Master's degree; hospital and/or community nutrition experience; valid driver's license. Sick leave, vacation, retirement pension plan. Apply to Dr. Roland R. Cross, Director, De-

partment of Public Health, State Office Bldg., Springfield, Ill.

**Health Educator**—for County Health Department in Michigan. Newly created position. Salary $5,000–$6,000. Degree in health education required. Write **Box HE-87,** Employment Service, APHA.

**Director, Division of Nutrition (Nutritionist III)**—$7,055–$9,011. Plans, organizes, and administers a state-wide program of public health nutrition. Master's degree and five years' experience as a nutritionist in a health, welfare, or social agency, including at least one year in a supervisory or administrative capacity. **Assistant Director, Division of Nutrition (Nutritionist II)**—$6,090–$7,772. Assists the director in developing and administering a comprehensive program of public health nutrition. Master's degree and four years' experience as a Nutritionist in a health, welfare or social agency. **Regional Nutritionist (Nutritionist I)**—$5,268–$6,716. Serves as regional nutritionist in a generalized public health program. Master's degree and two years' experience as a nutritionist, dietitian, or teacher of foods and nutrition. For applications or further information please write to Mr. Andrew L. McCabe, Personnel Director, Pennsylvania Department of Health, P. O. Box 90, Harrisburg, Pa. Applications should be mailed not later than February 21, 1958.

**Public Health Nutritionist**—Develop and conduct program in district area, including consultation to nurses, teachers, social workers, small hospitals, nursing homes, children's institutions; training programs; community studies and general nutrition education. Master's degree, internship, two years' hospital and community nutrition experience. $5,712–$6,852 plus travel expense. Vacation, sick leave, Social Security, retirement. Dr. Amy L. Hunter, State Board of Health, Madison, Wis.

**Sanitarian**—To initiate and execute a program of public health sanitation and education in Park Forest, rapidly growing, nonpolitical, model suburb of Chicago. Bachelor's degree and graduate level training or equivalent experience. Salary range $5,700–$6,900. Apply John L. Scott, Village Manager, Village Hall, Park Forest, Ill.

**Public Health Sanitarians**—Salary range $5,296–$5,656 annually. Work in County Health Department, 17 miles from downtown Detroit. One-day vacation and sick leave earned per month, liberal retirement benefits. Age not over 50. Training: B.S. in sanitary science or civil engineering with sanitary option; or B.S. degree in allied science plus one year experience. Apply: Morton Hilbert, Chief Engineer, Wayne County Health Department, Eloise, Mich.

**MICROBIOLOGIST-SEROLOGIST**

Position open in a midwest bioanalytical laboratory in the process of expansion. Salary starts at $7,500 per year with yearly increments of $500 to follow for three years; subsequent increases by bonus arrangement.

Send snapshot and complete resumé. Position open for Ph.D. or equivalent.

Write care of—

**Box Number L-58**

**Employment Service**

American Public Health Association

1790 Broadway

New York 19, N. Y.

## POSITIONS WANTED

**On Box Numbers, Address APHA at 1790 Broadway, New York 19, N. Y.**

**Microbiologist-Pathologist**—M.D. (1928), Ph.D. (microbiology); formerly teaching midwestern medical school; experience with WHO; teaching at present in Indian university. Extensive research work in United States and Far East. Seventy-one publications; textbook in preparation. Desires position as associate or professor of microbiology or pathology. Write **Box PH-77,** Employment Service, APHA.

**Dr.P.H.**—seeks responsible position in health programming or as research coordinator. Offers excellent academic training and is experienced with voluntary and official health agencies. Background includes teach-

ing experience in anatomy, biostatistics, epidemiology, and hospital administration. Write **Box C-34,** Employment Service, APHA.

**Biostatistician, Ph.D.**—seeks university research affiliation; broad range of experience and publications; development of meaningful statistical systems and designs for clinical evaluation; background of application in psychiatry, epidemiology, psychopharmacology, chemotherapy in tuberculosis, and general medicine. Write **Box ST-15,** Employment Service, APHA.

**Bacteriologist (with Virological Experience)**—Ph.D., M.P.H., returning from foreign assignment January, 1958, desires opportunity in public health or medical laboratory, university, or research. Extensive experience in public health laboratory administration; organization and implementation of laboratory approval and training programs in the United States and foreign countries; research; publications. Write **Box L-57,** Employment Service, APHA.

**Research and Teaching**—Desire research position with opportunity to utilize case study as a method of research for studying families with exceptional, mentally retarded, or mentally ill children or other family members. Near Ph.D. in sociology; M.P.H. and M.A. Twelve years' research and analytical experience in combined health, social science, and maternal and child health areas; one year teaching experience in demography. Publications. On research scholarship in area of mental retardation. Prefer university position, but will consider other agencies. Will relocate. Available July 1, 1958. Single, woman. Write **Box M-18,** Employment Service, APHA.

## Commercial Advertisements

**All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Suite 605, 900 North Michigan Avenue, Chicago 11, Ill.**

### OPPORTUNITIES AVAILABLE

(a) Director, county department of health; progressive agency; own modern building; staff of 100; Midwest; $15,000-$16,000. (b) Psychiatrist to head mental health program; duties entirely administrative with clinical consultations; outside U.S.; $20,000. (c) Epidemiologist; preventive medicine staff, foreign operations leading industrial company; $14,000, plus $4,000 family maintenance; federal tax free. (d) Professor or associate professor of public health administration and chairman of school of public health, university under American auspices; foreign country; department covers public health, administrative medicine, tropical health; students from 17 different countries; all teaching in English; travel provided for appointee and family. (e) Health division director; council comprised of 143 agencies and organizations and 275 individuals at large; graduate degree with special courses in community organization, public health administration and education required; supervisory experience in field or public health required; $6,480-$8,100. (f) Professor and director of division of public health engineering and, also, associate or assistant professor; American type school of public health; university under American auspices, foreign country. (g) Sanitarian; degree in sanitary sciences, public health or engineering, three years' experience required; foreign operations, major industrial company; $10,000-$12,000. (h) Supervisor of sanitary inspection; state health department, Midwest. (i) Health educator to direct city-wide health education program; university city, Midwest; $5,700-$6,500. PROFESSIONAL NURSES FOR FOLLOWING: (j) Head of public health nursing program; university under American auspices, foreign country; students from 13 countries; all instructions in English. (k) Assistant chief director of nurses qualified serve as consultant; state health department; $7,500. (l) Director, public health nursing; county health department; master's, 5 years' experience, part of which in supervisory capacity desirable, California; $450-$550. (m) Public health mental health instructor; $5,500, for 10-month year; university college of nursing, East. (n) Instructor to direct native students; Pacific Island military base. (o) Director, nursing school and service, university hospital operated under American auspices, foreign country; department covers public health; students from 17 countries; all teaching in English. (p) Nurses for university medical school research program in pediatrics; challenging opportunities; West. (q) Instructor-supervisor in maternity nursing; foreign; $7,000.

### OPPORTUNITIES WANTED

WANTED—Opportunities for public health physicians, nurses, health educators, engineers, laboratory personnel. Candidates in all parts of the country, available for administrative, academic, and staff appointments. Negotiations strictly confidential.

## BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

**Community Chest: A Case Study in Philanthropy**—By J. R. Seeley, et al. Toronto, Canada: University of Toronto Press, 1957. 593 pp. Price, $7.50.

The idea of giving alms to those in need has existed for thousands of years, but the organization of charity into the formal pattern of campaign on a community-wide basis developed on this continent around the turn of the century. Today, a very large part, perhaps even the major portion, of philanthropic activity takes the form of highly organized campaigns and agencies to collect money. Yet, this important social phenomenon has received hardly any serious scientific attention. This study by Seeley and his colleagues is, therefore, all the more welcome as it is the first large-scale research endeavor to subject mass fund-raising to critical examination, and thus makes an important contribution to a field where heat rather than light has been the dominant characteristic.

Initially, the study was undertaken to determine why the Indianapolis Community Chest over a period of years had "failed" to meet its goals. In the process it became necessary to examine not only local problems, but in the largest sense to anatomize voluntary giving as a social institution of the American community. The methods employed were "those of the social anthropologist, those of the economic analyst, and those of the observing citizen or participant observer." Furthermore, the historical approach was required to give depth to the uniquely local aspects of the study, as well as to locate it comparatively in the national area.

Broadly speaking, the study had two major objectives: (1) to examine the goals set for the Chest and by which its failure was defined, as well as the strategy of the campaign to achieve these goals; and (2) to obtain additions to knowledge that would be useful for both social theory and philanthropic practice. Moreover, the investigators had the courage to take nothing for granted, neither the act of giving nor the means by which money was solicited or even demanded. "The latent issues are of many kinds," they state, "but the principal ones, and those most charged emotionally, revolve around several distinct questions. One of these—perhaps the most fundamental—is whether the Chest ought fundamentally to conceive of itself in relation to the community as an occupying army, levying what it needs while provoking as little rebellion as possible, or whether it ought to conceive itself more on the model of an instrumentality of local desire, registering rather than manipulating public opinion, expressing local forces rather than molding them."

In this spirit the investigators have made a number of important contributions, i.e., in method and in the analysis of difficult problems. For example, since there was no established way of assessing the potential of a Chest area, one was devised, based on the finding that five factors—(1) region, (2) population size, (3) productivity, (4) population composition, and (5) tendency to save—accounted for 74 per cent of the "opportunity" for any chest. It thus became possible to measure expected performance, actual performance, and the difference between these. Similarly, the issue of unified fund raising—a "hot potato," to judge by recent discussions in the Journal—is handled in an objective, balanced, discriminating manner. Pertinent questions are raised to show

the complexity of the problem and the point is made that not enough valid evidence is actually available to decide for or against United Funds. In general, the discussion is on the level of analysis of strategy in community organization.

Seeley and his co-workers have produced a pioneering work which will be of interest to anyone concerned with community work—health officers, voluntary agency workers, welfare workers, and many others. It is well written and offers a large number of hypotheses for more research on the intricate problems of philanthropy.

GEORGE ROSEN

**Biochemical Disorders in Human Disease**—By R. H. S. Thompson and E. J. King. New York: Academic Press (111 Fifth Ave.), 1957. 843 pp. Price, $12.60.

This volume, authored by two professors of chemical pathology at the University of London, explores our knowledge of the processes underlying disease and goes into the complex realms of abnormalities resulting from disorder of the enzyme-catalyzed reactions occurring within the cells. As the authors point out, "For many diseases pathology is now passing from the stage of morbid histology to that of morbid biochemistry. Until recently, only a few diseases were interpretable in terms of disordered biochemistry. Now the rapid strides that biochemical techniques and theory have made have greatly extended this approach to pathology."

The average reader will be surprised in how many disease states changes can now be interpreted through biochemistry. The authors are mostly British and appear to be very competent in their fields.

The volume will be most frequently of interest to physicians in the field of internal medicine. It should prove also of interest to those involved in research who will be grateful to the authors for their comprehensive treatment of many interrelated subjects.

REGINALD M. ATWATER

**Teaching Nutrition**—By Mattie Pattison; Helen Barbour; and Ercel Eppright. Ames, Iowa: Iowa State College Press (Press Building), 1957. 212 pp. Price, $3.95.

Written in the language of education specialists, this book is considered by the authors as a "handbook for teaching." The volume points up the deficiencies of some nutrition education approaches and the importance of recognizing the cultural and social influences upon food habits.

Approximately one-third of the text is devoted to a chapter entitled, "Generalizations and Facts," a series of statements, not documented, about the relation of nutrition to health. These statements are clearly worded and would be of great value to writers of popular magazine or newspaper articles.

The authors believe the method of teaching generalizations, based on facts, may be employed in nutrition education programs for people of all ages and interest levels. They recognize, however, that "people of high intelligence" are best able to generalize, while the "majority of people must develop the ability." In view of this opinion one questions the emphasis on a technic requiring some degree of skill, plus a knowledge of nutrition, but only brief references to and discussion of other educational methods.

The book will be of interest to college instructors who can guide their students in evaluating both nutrition information and the effectiveness of several educational methods. Teachers and health workers will need either some training in nutrition or assistance from an experienced nutritionist to make full use of this material.

The appendix includes an excellent list of references which will be of value

to those with access to a good college or medical library. There is also a glossary of words and technical terms frequently used in nutrition; a description of one method of scoring a dietary survey; and a brief section on the care, feeding, and characteristics of rats.

BERTLYN BOSLEY

**Clinical Toxicology of Commercial Products. Acute poisoning (Home and Farm)**—By Marion N. Gleason; Robert E. Gosselin; and Harold C. Hodge. Baltimore, Md.: Williams and Wilkins (Mt. Royal and Guilford Aves.), 1957. 1160 pp. Price $16.00.

This work is a reference volume of detailed information concerning acute poisonings by chemicals that are present frequently in homes and farms. It is designed to provide the practicing physician with relevant information concerning the chemical composition, the physiologic action of the ingredients, and therapeutic measures (both general and specific) for materials that are packaged with or without adequate labels. The book is divided into seven sections (General Emergency Treatment, Ingredients Index, Therapeutic Index, Supportive Treatment, Trade Name Index, General Formulations, and Manufacturers' Names and Addresses) which by their divisions and the unique instructions for use make it possible for the physician to find information concerning immediate treatment and long-range medical management of emergency cases, even though he may be completely unfamiliar with the name or ingredients of the material that caused an intoxication.

Although this volume is considered to be a reference manual, the sections on First Aid and Emergency Treatment and Supportive Treatment merit complete and intense review because of their general nature and broad scope of application. The section entitled, Therapeutic Index, is a brief but excellent course in the toxicology of some of the more important materials in this field. The advent of this work is long overdue; it should be in every hospital emergency room, in all poison control centers, and available to every physician who has occasion to see any cases of acute poisoning anywhere.

FRANK PRINCI

**Alcoholism, Basic Aspects and Treatment**—By Harold E. Himwich. Washington, D. C.: American Association for the Advancement of Science (1515 Massachusetts Ave., N.W.), 1957. 220 pp. Price, $5.75; $5.00 to AAAS members.

This is a valuable book for the record, and for those who are serious students of alcoholism. Its title is somewhat misleading, however, for it by no means covers the whole complex and fascinating field of alcoholism as it is being approached today on many different levels and through many different disciplines. Rather the book confines itself, as did the symposium it reports, to two main themes: "Basic Aspects" and "Treatment." And even under these two headings, the reports are extremely limited.

Perhaps the greatest contribution of the book is the glaring light it throws on the truly appalling gaps in our knowledge of this vast and costly problem. While there is general agreement that alcoholism is a treatable disease, there is also agreement that not enough is known about it: questions are posed time and again to which there are, as yet, no known answers. In short, as one reads, this becomes a clarion call to action—to more research, to more and better treatment facilities, to more understanding.

But to the reader seeking knowledge, and information on how to use that knowledge, this book will be a disappointment. Fortunately, there are other

sources and a fast-growing literature on the subject. This book has its place in that literature. MRS. MARTY MANN

**Diagnosis and Treatment of Cardiovascular Diseases**—Edited by William D. Stroud and Morris W. Stroud, III. Philadelphia, Pa.: F. A. Davis (1914 Cherry St.), 1957. Loose-leaf, two vols. Price $35.00 a set.

This is the fifth edition of this well-known work on the "Diagnosis and Treatment of Cardiovascular Diseases" and represents a transition to a loose-leaf form. The editors plan to keep the chapters up to date by continual revision and such additions apparently will be issued as necessary to replace portions of the loose-leaf text. The 60 contributors listed represent men active in the various phases of cardiology upon which they report and they give a desirable authority to the text. However, the editors have listed contributors, two of whom have been dead for several years, whose names do not appear as authors in the chapters concerned. On the contrary Reynolds, who collaborated with Johnston in the chapter on the "Form of the Electrocardiogram," is not listed at all.

As in all texts of multiple authorship, there is not only overlapping in the discussions, which in this work is minimal, but there is also great variability in the smoothness and completeness with which the varying sections are handled. Beck's section on cardiac surgery, for example, does not give a full, unbiased view on revascularization procedures. The chapters on electrocardiography by Johnston and Reynolds and by Bellet and McMillan are particularly good examples of the conciseness and clarity with which this often confusing subject can be given. In general, the text material is well prepared and clearly presented. The new edition should elevate further the enviable position the work already holds.

Much effort has been expended on the index, which is now more complete and more satisfactory. This adds to the worth of the new edition for reference.

This new edition is much improved in its general form and in its approach to the subject. With such changes as the loose-leaf format and the more adequate index, the work should be still more valuable for the practicing physician, who will now find the various topics kept up to date and the use of the book as a reference greatly improved.

WILLIAM A. SODEMAN

**Aspects of River Pollution**—By Louis Klein. New York: Academic Press (111 Fifth Ave.), 1957. 621 pp. Price, $14.50.

This masterly treatise on river pollution is of equal worth to American and English administrators, those carrying on research, students, and operators in the water pollution field.

The different kinds of pollution affecting rivers are discussed; the causes are examined; the bad effects considered; and the methods available for dealing with all types of river pollution are reviewed.

Well selected quotations head each chapter, while the hundreds of carefully selected English and American references closing each chapter attest the meticulous care with which every aspect of river pollution has been dealt with by the author and his associates, Drs. Jones and Hawkes.

All American sanitary engineers who have struggled with water pollution problems will feel more keenly than ever after studying this valuable book that we are linked closely with our English co-workers. In this volume the author has given us all a sharp-edged, useful tool to help in the task of lessening the detrimental effects of water pollution both in England and America.

The author points out in a philosophical summary that "pollution, like crime, disease, and road accidents' will eventu-

ally be brought under control but it will never be completely eliminated."

ELLIS S. TISDALE

**An Inventory of Social and Economic Research in Health**—Compiled by Frederick R. Strunk. New York: Health Information Foundation (420 Lexington Ave.), 1956. 254 pp. Free.

The preface to this inventory, now in its fifth annual edition, reports "a widening and growing interest in the social and economic aspects of medical care." The total of 498 research projects described is reported to indicate what "many researchers are aware of, that the purely natural and physical science approach to health problems is inadequate for a total comprehension of disease and of organized means by which health facilities and people may be brought together."

There are about 80 studies related to each of six areas—health levels, mental health, sociologic factors, and personnel, and 29 related to economic factors.

The five indexes classify the studies by subject, organizations conducting the research, project personnel, geographic areas, and sponsors.

MARTHA LUGINBUHL

**The Dynamics of Interviewing, Theory, Technique, and Cases**—By Robert L. Kahn and Charles F. Cannell. New York: Wiley (440 Fourth Avenue), 1957. 368 pp. Price, $7.75.

In their preface the authors point out that in practically all professional endeavors, and in management and business administration as well, success depends to a large extent on the ability to obtain information from others. They have admirably fulfilled their stated purpose of writing "about the theory and practice of interviewing in a way that will be meaningful to students and practitioners in these diverse fields." Attention is concentrated on the information-getting interview.

The fundamentals of human communication are briefly discussed and there are excellent chapters summarizing the psychologic basis of interviewer-respondent interaction and describing technics for motivating the respondent. The general principles involved in planning of interviews and in the design of questionnaires are discussed. The uses and limitations of the interview as an instrument of measurement are treated, with a good discussion of the sources and dynamics of bias. A chapter on the principles and the technics of probing to meet interview objectives is included, and the first (and larger) part of the book concludes with a chapter on methods of learning to interview.

The second part of the volume consists of carefully annotated transcripts of several different kinds of actual interviews including, among others, a medical case history and a social work interview with a psychiatric patient before his discharge from the hospital.

The work is well organized and the subject matter is well covered in nontechnical language. It is clearly and at times entertainingly written, and in this respect might serve as a model to other authors treating serious or technical subjects. The free and skillful use of carefully selected examples and illustrative material adds much to the exposition. There is a good working bibliography for the reader who wishes to pursue the subject further.

The book can be recommended to all who have occasion to seek information from others in oral communication, which certainly includes most public health workers.

ROBERT E. COKER, JR.

## BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ADVANCES IN TUBERCULOSIS RESEARCH. Vol. VIII—BCG—A Discussion of Its Use and Application. Edited by Hans Birkhauser and Hubert Block. Springfield, Ill.: Thomas, 1957. 316 pp. Price, $11.00.

ATOMIC ENERGY IN MEDICINE. K. E. Halnan. New York: Philosophical Library, 1957. 157 pp. Price, $6.00.

BIOGRAPHY OF A FOUNDATION 1929–1954. William C. Richards and William J. Norton. Detroit, Mich.: Children's Fund of Michigan, 1957. 195 pp.

CLINICAL AND IMMUNOLOGIC ASPECTS OF FUNGOUS DISEASES. J. Walter Wilson. Springfield, Ill.: Thomas, 1957. 280 pp. Price, $6.75.

CONTEMPORARY DEVELOPMENTS IN OCCUPATIONAL HEALTH NURSING. Fourth Annual Workshop in Industrial Nursing, March 29–30, 1957. Oklahoma City, Okla.: University of Oklahoma Medical Center, Industrial Nursing Workshop, 1957. 116 pp. Price, $2.00.

ECONOMICS OF ATOMIC ENERGY. Mary S. Goldring. New York: Philosophical Library, 1957. 179 pp. Price, $6.00.

EDUCATORS GUIDE TO FREE TAPES, SCRIPTS AND TRANSCRIPTIONS (4th Annual Edition). Walter A. Wittich and Gertie Hanson Halsted. Randolph, Wis.: Educators Progress Service, 1958. 206 pp. Price, $5.75.

FIT TO TEACH—YEARBOOK ON TEACHER HEALTH. Washington, D. C.: American Association for Health, Education, and Physical Education and Recreation, 1957. 249 pp. Price, $3.50.

HUMAN RELATIONS AND POWER. Albert Mueller-Deham. New York: Philosophical Library, 1957. 410 pp. Price, $3.75.

ILLUSTRATED BIRTH CONTROL MANUAL, THE. Valeria Hopkins Parker. New York: Cadillac Publishing, 1957. 392 pp. Price, $5.00.

INCURABLE WOUND AND FURTHER NARRATIVES OF MEDICAL DETECTION, THE. Berton Roueche. Boston, Mass.: Little, Brown, 1957. 177 pp. Price, $3.50.

INVENTORY OF SOCIAL AND ECONOMIC RESEARCH IN HEALTH, AN. (6th ed.). New York: Health Information Foundation, 1957. 327 pp. Free.

LABORATORY APPLICATIONS IN CLINICAL PEDIATRICS. Irving J. Wolman. New York: McGraw-Hill, 1957. 1019 pp. Price, $15.00.

NON-GROUP ENROLLMENT FOR HEALTH INSURANCE. A Study of Administrative Approaches of Blue Cross Plans. Sol Levine; Odin W. Anderson; and Gerald Gordon. Cambridge, Mass.: Harvard University Press, 1958. 171 pp. Price, $5.00.

PRACTICAL CLINICAL CHEMISTRY. Alma Hiller (2nd ed.). Springfield, Ill.: Thomas, 1957. 265 pp. Price, $6.50.

PRACTICAL NOTES ON NURSING PROCEDURES. Jessie D. Britten. Baltimore, Md.: Williams & Wilkins, 1957. 192 pp. Price, $4.00.

PRE-EMPLOYMENT DISABILITY EVALUATION. William A. Kellogg. Springfield, Ill.: Thomas, 1957. 155 pp. plus. Price, $10.50.

SHOCK AND CIRCULATORY HOMEOSTASIS. Harold D. Green. New York: Josiah Macy, Jr. Foundation, 1957. 337 pp. Price, $4.75.

SOCIAL HYGIENE PAPERS—A SYMPOSIUM ON SEX EDUCATION. New York: American Social Hygiene Assn., 1957. 38 pp. Price, $1.00.

VITAL STATISTICS OF THE UNITED STATES 1955. Vol. I. National Office of Vital Statistics. Washington, D. C.: Gov. Ptg. Office, 1957. 366 pp. Price, $4.00.

VOLUNTEERS, THE. David L. Sills. Chicago, Ill.: Free Press, 1958. 320 pp. Price, $6.00.

YOU MUST RELAX. Edmund Jacobson (4th ed. rev.). New York: McGraw-Hill, 1957. 269 pp. Price, $4.50.

# A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

*Raymond S. Patterson, Ph.D.*

**"Medicotrafficology"**—This beautiful word was coined, not in complete seriousness, to suggest another area of medical interest. Practicing physicians, more than any other group, see the end results of highway carelessness and, therefore, should comprehend most fully the need for effective preventive measures against highway accidents. Seat belts are stressed.

ANON. The Automobile—A Challenge to Preventive Medicine. J.A.M.A. 162, 9:888 (Oct. 27), 1957.

**Health Education, Here and Abroad**—Our own Dr. Bauer outlines the elements of our health educational mechanisms that we have perfected over the last quarter century. Then, by contrast, three reporters tell about current programs or projects undertaken in the United Kindom, in Argentina, and in Burma.

BAUER, W. W. A Health Education Program for the Public (and three related papers). World M. J. 4, 6:327 (Nov.), 1957.

**It Worked**—Three studies were designed to determine the protective value of vaccine against Asian influenza. The limited number of volunteers who could be studied did not permit an estimate, within narrow confidence limits, of the amount of immunity produced. But the vaccines did give significant, though incomplete, protection. Among the placebo group 78 per cent, and among the vaccinated groups 44 per cent became ill with challenge-induced influenza.

BELL, J. A., et al. Artificially Induced Asian Influenza in Vaccinated and Unvaccinated Volunteers. J.A.M.A. 165, 11:1366 (Nov. 16), 1957.

**Researchers Needed**—Public health people are not doing as much as they might, these commentators say, in effect, to seek a better understanding of the causes, care, and prevention of the major diseases and disabilities of man. What they might be doing is the burden of this review of the currently available supports that could stimulate the needed research. Recommended reading for all.

HARDY, A. V., and DUBLIN, T. D. Research in State and Local Health Departments. J.A.M.A. 165, 14:1808 (Dec. 7), 1957.

**Lagging School Health**—There are many proposals explored in this plea for family-centered, school-age child health services. One suggestion is this: health services for the adolescent, who is in a period of rapid development, are of prime importance. Though these adolescents are largely neglected in most schools, they deserve a higher priority than do the children in the elementary grades who get the lion's share of attention.

JACOBZINER, H. Health Services for the School-Age Child—A New Approach. J.A.M.A. 165, 13:1669 (Nov. 30), 1957.

**What Doctors Think of Mental Health**—In New Jersey a large sampling of practicing physicians were queried about their idea concerning psychiatric services and community needs. The findings are too many to be epitomized here but all are pertinent to our burgeoning interest in mental hygiene.

"Not one doctor in five says he does 'quite a bit' of reading in psychiatry." It would be equally revealing to discover how many public health people also read "quite a bit" in the same area.

KORKES, L. Physicians' Attitudes Toward Mental Health Problems. Ment. Hyg. 41, 4:467 (Oct.), 1957.

**Experience Meeting**—In a town of 8,500 population (with a part-time health officer and one public health nurse) a successful diabetes detection project was carried out with a local health association. House-to-house canvassing by volunteers supported by an effective publicity program produced good results thanks largely to intelligent planning.

LARSON, E. D. A House-to-House Search for Diabetes. Nursing Outlook 5, 11: 648 (Nov.), 1957.

**Psychiatric Illnesses**—Three etiologic classifications of mental illness are postulated here. In instances of organic brain damage (the first classification) we know, and do, a lot about prevention. For the second, illnesses due to individual stress, preventive measures are fairly clear and are in some part applied. It is the third, those due to group stresses resulting largely from our cultural patterns, that are most in need of epidemiologic study.

LEMKAU, P. V. Prevention of Psychiatric Illnesses. J.A.M.A. 162, 9:854 (Oct. 27), 1957.

**Decade of Progress**—Los Angeles County and its growing pains are probably too widely known to need discussion here. Ten years ago a citizens advisory committee was formed to help the county health department solve some of its pains, and today—no longer a "new broom"—its active groups of volunteers, influential well wishers, workers for better health services, etc., still do some pretty clean sweeping. How these collaborative groups were organized and kept in being may be well worth your looking into.

NEWTON, F. V., and SMITH, H. C. Citizens for the Los Angeles County Health Department. Nursing Outlook 5, 11:632 (Nov.), 1957.

**For the Record**—In a wide sampling of "healthy" navy recruits, subsequent tuberculosis morbidity rates were 157 per 100,000 among positive-tuberculin reactors compared to 29 for nonreactors. This is interpreted to mean that a high proportion of cases among reactors must have been those of endogenous disease. Morbidity was four times as high among boys 15 per cent or more underweight, but body build seemed unrelated to infection.

PALMER, C. E., et al. Tuberculosis Morbidity of Young Men in Relation to Tuberculin Sensitivity and Body Build. Am. Rev. Tuberc. 76, 4:517 (Oct.), 1957.

**Parenthood's Hazard**—In a study of the relationships of sex, marital status, pregnancy, and number of children to the incidence of paralytic poliomyelitis, the most significant factor was found to be the presence or absence of children in the household. In such households pregnant women had the highest rates and single women the lowest.

SIEGEL, M., et al. Presence of Children in the Household as a Factor in the Incidence of Paralytic Poliomyelitis in Adults. New England J. Med. 257, 20:958 (Nov. 14), 1957.

**Complacency Cure**—This may be news to you. Cases of primary and secondary syphilis have been increasing steadily since 1953 (in New York State, that is, and by inference elsewhere). Syphilis is now confined predominantly to the lowest socioeconomic groups. The

control job is by no means done, and the most effective control method remains the interview of infectious cases.

THOMAS, E. W. Syphilis Control in Upstate New York. New York State J. Med. 57, 22:3639 (Nov. 15), 1957.

**Just for Pleasure**—Do you ever read scientific treatises "just for fun?" Have you heard of many presidential addresses that might tempt you chiefly for that reason? Well, here is one. It is the area of experimental pediatrics, but it has a lot to say (wryly and amusingly) to those of us who may have other areas of professional interest. In the society he addresses there seems to be a rule establishing an emeritus status when a member reaches a given age: and that idea should be sufficient in itself to catch your eye. Evidently pioneering is for youngsters!

WALLACE, W. M. Presidential Address. Society of Pediatric Research. J. Dis. Child. 94, 5:470 (Nov.), 1957.

**Mostly Confirming What You Know**—Two excellent discussions of BCG and the place of TB prophylaxis in our American setting are hereby commended to you. The first is by a recognized authority on the basic prinples underlying the phenomenon of resistance to TB who is "noted for his sound judgment and unbiased approach to difficult and debated fields" (E. R. Long's words). The second covers the latest recommendations for a United States policy, which were formulated by a distinguished committee.

WALLGREN, A. J. BCG: Past, Present and Future (and) Report of Ad Hoc Advisory Committee on BCG to the Surgeon General of the U. S. Public Health Service. Am. Rev. Tuberc. 76, 5:715 (Nov.), 1957.

If additional information is desired regarding the articles listed in this bibliography, please communicate directly with the publications in which they appeared; the addresses are furnished for your convenience.

Am. J. Dis. Child (American Journal of Diseases of Children), American Medical Association, 535 N. Dearborn St., Chicago, Ill.

Am. Rev. Tuberc. (American Review of Tuberculosis), National Tuberculosis Association, 1790 Broadway, New York 19, N. Y.

J.A.M.A. (Journal of the American Medical Association), 535 N. Dearborn St., Chicago 10, Ill.

Ment. Hyg. (Mental Hygiene), National Association for Mental Health, 372 374 Broadway, Albany 7, N. Y.

Nursing Outlook, American Journal of Nursing Company, 2 Park Ave., New York 16, N. Y.

New England J. Med. (New England Journal of Medicine), Massachusetts Medical Society, 8 The Fenway, Boston 15, Mass.

New York State J. Med. (New York State Journal of Medicine), 292 Madison Ave., New York 17, N. Y.

World M. J. (World Medical Journal), World Medical Association, 10 Columbus Circle, New York 19, N.Y.

# NEWS FROM THE FIELD

## WHO News

### Manuals of Food Hygiene

As a beginning in improving the food hygiene situation, the Executive Board of WHO has decided that several manuals relating to this subject need to be prepared, each dealing with a group of countries having somewhat similar problems and food practices and customs. Thus, as a beginning, Professor Walter S. Mallmann of Michigan State University has been employed as a short-term consultant to study food hygiene practices in Yugoslavia, Turkey, and Iran. He is studying not only the technology of food production, processing, and distribution, but also the administrative and legal practices governing hygienic control of food. Further, the national health authorities are drawing on his experience for help in coping with local conditions.

### 7 Million for Malaria Eradication

On December 5, 1957, the United States government presented WHO with a check for $7,000,000 and the Pan American Sanitary Bureau with one for $2,000,000 as a contribution to the special funds for world eradication of malaria. The ceremony took place in the Department of State with the checks presented by Secretary of State John Foster Dulles to Director-General M. G. Candau, M.D., of WHO, and Director Fred L. Soper, M.D., of PASB.

In expressing the thanks of WHO, Dr. Candau emphasized that an even more significant contribution by the United States was its "great technical knowledge" made available to the whole world.

The total now provided by the United States government toward the special malaria eradication fund is $8,500,000, one and a half million having been provided in September, 1956.

### New York Considers Perinatal Deaths

A recent meeting in New York City of 100 participants, sponsored by official and voluntary health agencies and the medical profession, made recommendations on improvement of maternity care and reduction of avoidable infant deaths. The meeting was a follow-up of a 1955 study in which it was found that of 955 perinatal deaths (deaths of babies from the 20th week of gestation through the sixth day after birth) one-half could have been prevented, although the other half were unavoidable in the present state of medical knowledge.

The meeting, made up of experts in obstetrics, pediatrics, nutrition, pathology, anesthesiology, nursing, hospital administration, social work, preventive medicine, and health education, was divided into 10 discussion groups each of which reported findings and recommendations.

Among the recommendations made were ones for better teaching of interns and house physicians, for 24-hour medical supervision of obstetrical services, better prenatal care particularly for lower economic groups and more extended use of social workers and of nurses trained in midwifery, an appointment system in prenatal clinics, education of every young person in the childbearing process, continued contact with the hospital after discharge, better record keeping, and discussion of current perinatal mortality at hospital staff meetings.

Prematurity causes two-thirds of all perinatal deaths and costs 260 per cent more per case in municipal hospitals than full-term delivery. Strengthening prenatal care particularly among those with socioeconomic problems where

more social case work is needed, study of the relation between nutrition and prematurity and providing nutritional supplements for the pregnant women in the same way as medication, avoidance of fatigue by all pregnant women with those of small heart volume and low hemoglobin refraining from active physical work, avoidance of "meddlesome" obstetrics and elective inductions of labor, as well as further research in habitual abortion and endocrine imbalance, were among the recommendations for reducing perinatal deaths.

The 1955 study on which the meeting was based is "Perinatal Mortality in New York City," Harvard University Press, 1955, $2.50. (A.J.P.H. 45:1492 (Nov.), 1955.)

## National Health Survey Early News

The Public Health Service has begun sending out weekly provisional tabulations from the United States National Health Survey. The five issues out as of December 5 have related to statistics of respiratory diseases. As of that report, cumulative data for the 19-week period beginning July 1, indicated an estimate of about 83,086,000 new cases of respiratory diseases resulting in about 282,000,000 bed days of disability.

The data are based on a house-to-house sampling interview survey conducted by "trained, supervised lay interviewers." The calculations are described as subject to about 15 per cent sampling error over a period and considerably larger for any single week.

This material is available to health and other agencies throughout the country. United States National Health Survey, Public Health Service, Washington 25, D. C.

## A New Community Foundations Group

The National Council on Community Foundations was recently incorporated as a continuation of the National Committee on Community Foundations which has been in existence since 1949. The Council has received a $45,000 three-year matching grant from the Rockefeller Foundation to help underwrite an expanded program for strengthening the community foundation movement.

Community foundations, which are distinct from community chests or united funds, are organized to receive gifts from living donors or through bequests. They offer means by which citizens of the community may perpetually manage and employ charitable gifts for the benefit of the community. They are designed to meet capital as well as operating needs and include civic and cultural services in addition to health and welfare.

Mrs. Wilmer Shields Rich, who was editor of "American Foundations and their Fields" (7th ed.), and American Foundation News, has been named executive director of the new organization which has offices at 345 East 46th St., New York 17, N. Y.

## Light and Vision Engineering Course

"Light and Vision" is the subject of a three-day short course sponsored by the University of Michigan and the Illuminating Engineering Society to be held at the University March 19–21. Developed and conducted by the Institute of Industrial Health, School of Public Health, and the Vision Research Laboratories, with the cooperation of the Bureau of School Services, College of Architecture and Design, Department of Physics, and School of Education of the university, and the State Departments of Health and Public Instruction, the course is designed for industrial hygienists, public health personnel, school administrators, and others. The directory of 44 participants includes lighting engineers from a variety of commercial

firms, such as General Electric, Detroit Edison, and others; university staff members and members of professional societies related to lighting environment.

Applications and further information from Continued Education Service, School of Public Health, 109 South Observatory St., Ann Arbor, Mich. $10 enrollment fee includes published proceedings of the course.

## Alameda County Consolidation

During 1957 the Alameda County Health Department of California enlarged its operations by absorbing the hitherto independent health departments of two cities—Alameda and Oakland. With the headquarters office and three health centers and two subcenters the department now serves a population of more than 600,000, including the entire county except Berkeley and one small city.

An assistant health officer is in charge of each health center which has at least nursing, sanitation, and clinic services. The county health officer is James C. Malcolm, M.D., M.P.H., who was the county officer before consolidation.

## A New California Alcoholism Digest

A "California Alcoholism Review and Treatment Digest" is the newest periodical of the California State Health Department. Published bimonthly by the Division of Alcoholic Rehabilitation, it succeeds the News Letter and Alcoholism Review of the former State Alcohol Rehabilitation Commission, to which the state division is also a successor. In addition to local news, it publishes news of other areas and papers of national leaders. In the first issue, for example, two articles originally appearing in the Yale Journal of Alcohol Studies and a lecture given at the Intercollegiate School of Alcohol Studies at Nebraska Wesleyan University are reproduced. There is also a list of the eight public alcoholic rehabilitation clinics in the state.

Manuscripts are solicited and should be sent to John R. Philp, M.D., Chief, Division of Alcoholic Rehabilitation, 2151 Berkeley Way, Berkeley 4.

## Dr. Lehman Is President of AAPHP

Sanford P. Lehman, M.D., director of the Seattle-King County Health Department, was elected president of the American Association of Public Health Physicians at its meeting in Cleveland on November 13. He succeeds Winston H. Tucker, M.D., health officer of Evanston, Ill. In his presidential report Dr. Tucker suggested that AAPHP should interest itself actively in the development of local health departments administered by trained medical men and should develop a legislative program.

At this meeting the offices of bulletin editor and secretary-treasurer were separated. Ben Freedman, M.D., director, Division of Preventive Medicine, Louisiana State Department of Health, thus succeeded E. M. Holmes, Jr., M.D., as editor. Other officers elected are:

President-Elect—John W. Cronin, M.D., chief, Bureau of Medical Sciences, Public Health Service

Vice-President—L. L. Fatherree, M.D., health officer, Will County, Ill.

Secretary-Treasurer—Joseph M. Bistowish, M.D., health officer, Leon County, Fla.

## Migrants Given Rapid Syphilis Test

A demonstration of the use of the Rapid Plasma Reagin (RPR) test for syphilis under primitive conditions was carried on in California in the spring of 1957. At the Border Agricultural Collection Station in El Centro, Calif., a three-man team from the Public Health Services Venereal Disease Experimental Laboratory at the University of North Carolina, in an 11 week period, screened some 50,000 Mexican migrant farm

workers. The report of this project says: "The success was an outstanding example of rapid application of laboratory research to field application and allowed for the saving of uncountable thousands of dollars to the American taxpayer."

The RPR test was developed at the Chapel Hill Laboratory by Warfield Garson, M.D., and Joseph Portnoy, Ph.D. Test results are available in less than 10 minutes after the blood specimen is taken.

In the tests at El Centro "as many as 2,500 persons were tested in a four-hour period—a feat never previously accomplished with so few workers in an improvised on-the-spot laboratory." Because of this "superior performance," the three-man team—Frances Field, William D. Shoemaker, and Jerry L. Smith of the Chapel Hill laboratory—were presented with cash awards of $100 by the Board of Employee Awards of the PHS Communicable Disease Center upon the recommendation of Dr. Garson who heads the laboratory and who also made the presentation. He said in part: "We honor our fellow-workers with these awards for the gift by them of unselfish devotion to a duty which in itself is a gift of better health to all people."

## Occupational Medicine Congress

The 13th International Congress of Occupational Medicine will be held in New York City in 1960. An American organizing group is chaired by Leo Wade, M.D., medical director of Esso Standard Oil Company. Serving with him as deputy chairmen are Leonard Greenburg, M.D., air pollution control commissioner of New York City, Seward Miller, M.D., medical director of the University of Michigan Institute of Industrial Health, and Robert E. Eckardt, M.D., of the Standard Oil Development Company, as secretary general.

A number of relevant agencies, including the American Public Health Association, are cooperating informally in the development of the program. John Lauer, M.D., medical director of Jones and Laughlin Steel Company, represents the Association on the organizing committee for the conference. Dr. Lauer is a Fellow of the 43-year-old Occupational Health Section.

The International Congress on Occupational Health meets triennially in various world capitals. The 1957 meeting was held in Helsinki, that of 1954 in Naples. Between 1,200 and 1,500 world experts in occupational health attended these congresses; more than 2,500 are expected in the New York City meeting in 1960. The three volumes recording the Helsinki meeting are now available from Jaakko Kihlberg, in care of Tyoveyslaitos Haart-maninkatu 1, Helsinki, Toolo, Finland.

## Work Conferences on Nursing

The School of Nursing of the University of Pennsylvania is offering several one- or two-week conferences for graduate nurses as follows:

Cancer Nursing Conference—February 10-14
Work Conference on Nursing in Chronic Disability—March 17-28
Cardiovascular Nursing Work Conference—May 5-16

One-semester credit is granted upon successful completion of the one-week conference, two credits for the longer conferences.

Further information as to qualifications, cost, living arrangements, and other details from School of Nursing, University of Pennsylvania, 205 South 34th St., Philadelphia 4.

## California Air Pollution Curriculum

The University of California, Berkeley, and its School of Public Health are adding to the curricula in industrial

health and in sanitary engineering in order to provide increased opportunity for training in air pollution research and control. Graduate students may now work toward an advanced degree with this special emphasis in either the School of Public Health (M.P.H., Dr.P.H.) or in the College of Engineering (M.S., Ph.D., or Professional).

Added courses include "Urban Meteorology," which will study the effects of climate, weather, and the city itself on atmospheric pollution dispersion or accumulation, and a lecture and seminar course in "Atmospheric Pollution Control" stressing methods of suppressing the urban problem by engineering, chemical, or other means. These supplement a laboratory and lecture course on "Atmospheric Pollution" in which effects, sources, important properties of major polluting materials and their source, and area-wide monitoring are discussed. At least two of these courses will be given in a six-week 1958 summer session. To obtain graduate credit for that period or for the same courses during the regular academic sessions qualified persons must be admitted to the Graduate Division.

A range of other courses in sanitary engineering, public and industrial health, chemical engineering, mechanical engineering, city and regional planning, and allied fields may be used for a complete program leading to the advanced degree. Further information from Dean C. E. Smith, Public Health, Dean M. P. O'Brien, Engineering, or Professor B. D. Tebbens, University of California, Berkeley 4.

## Study Hearing Loss Programs Needs

The American Academy of Ophthalmology and Otolaryngology, through its Subcommittee on Hearing in Children of the Committee on Conservation of Hearing, is conducting a long-term nation-wide study of problems relating to the conservation of hearing in children. Specific aims are to develop effective case-finding methods and to use them in estimating the magnitude of the problem; to study state laws and review current practices and facilities for rehabilitation of hearing-impaired children; to help develop methods for medical and surgical rehabilitation standards; and to use the findings in helping professional workers to improve programs in hearing loss.

Executive director of the study is Eldon L. Eagles, M.D., Graduate School of Public Health, University of Pittsburgh, where offices have been established. An initial study is being conducted in Pittsburgh to identify early medical signs that may indicate danger of hearing impairment, to measure the psychologic, social, and other effects of such impairment and to develop efficient and economical methods for the testing of hearing in children.

Cooperating with the Subcommittee on Hearing in Children are the Schools of Public Health and of Medicine of the University of Pittsburgh, the Pittsburgh Board of Public Education, and the Allegheny County Department of Health. An Advisory Committee of consultants from the university includes Drs. Samuel M. Wishik, Leo G. Doerfler, and Isidore Altman. Grants from the U. S. Children's Bureau and the National Institutes of Health are providing financial support.

## Reviewing Research and Development

The National Science Foundation has recently published "Basic Research—A National Resource." What basic research is, where it is carried on, and with what funds, what the needs are, ways of stimulating research, and the need for public understanding are discussed. "Basic research is so closely identified with cultural as well as technological progress that this alone pro-

vides sufficient reason for doing and supporting it. In the long run basic research pays off in the most practical terms. . . . It took years of basic research before the Bell Laboratories developed the transistor. . . . Direct and immediate links between basic research and its application are extremely rare."

Beginning in December, 1956, the Foundation has also been publishing "Reviews of Data on Research and Development." The November, 1957, issue of this four-page summary—not always monthly (No. 8 in the series)—was devoted to funds for research in agricultural experiment stations; the one preceding was devoted to funds for research and development in engineering schools, others to basic research and to university faculty scientific research activities. Data are based on the year 1953 or the academic year 1953–1954. They include expenditure by source of funds and by type of agency in which the research was carried on.

Not much is to be found out from the material so far, as to public health and medical research, but future issues may be more directly related to these subjects.

The pamphlet and the series of Reviews are available from the Gov. Ptg. Office, Washington 25, D. C. Pamphlet is 45 cents.

## New Institute of Nutrition Sciences

An Institute of Nutrition Sciences has been established at the Columbia University School of Public Health and Administrative Medicine in order to further the development of the educational and research program of the school. This program has two basic purposes—to give students comprehensive training in the nutrition sciences, particularly as related to public health, and to help relieve the shortage of well trained personnel in the nutrition sciences.

William J. Sebrell, Jr., M.D., former director of the National Institutes of Health, and currently chairman of the Williams-Waterman Fund, has been appointed director of the institute and professor of public health nutrition. Under his direction it is planned to increase facilities for the areas of graduate and postgraduate study most closely related to the nutrition sciences. It will also strengthen integration of related fields in the various units of the university, as well as facilitate cooperation with off-campus organizations.

## West Virginia Retools Bulletin

The former mimeographed monthly "West Virginia Health News" of the State Health Department has graduated into a two-color printed bimonthly entitled "West Virginia Health News and Views." The second issue is devoted largely to the control of Asian flu, pictured as a horrendous Oriental dragon. There is also a list of 44 recent newly appointed members of state and local staffs. Of the total, 17 are clerical, eight each are sanitarians and laboratory employees, six are nurses, and one each is a nutritionist, a veterinarian, a health educator, a clinical psychologist, and an administrative assistant.

## Cerebral Palsy Training Aided

The National Society for Crippled Children and Adults announces that scholarships for advanced specialized training in work with the cerebral palsied are available for doctors, physical, occupational, and speech therapists, special educators, and other rehabilitation personnel. Scholarships are granted for courses of not more than three months with primary emphasis on cerebral palsy and having either the participation of a member of the American Academy of Cerebral Palsy or prior approvals of the Academy members who

serve as counselors to the National Society.

Candidates must have completed requirements in their own professional fields and be eligible for membership in their own professional organizations. Deadline dates are April 1 for courses beginning June through December and for summer courses: October 10 for courses beginning January through May.

For further information write to the Personnel and Training Service, National Society for Crippled Children and Adults, 11 So. LaSalle St., Chicago 3, Ill.

## PERSONALS

GEORGE ADAMS, M.D.,* is on loan from the Public Health Service as assistant director, Division of Chronic Disease, Oklahoma State Department of Health.

LEE AASE, director, Division of Public Health Statistics, South Dakota Health Department, is on a 16-month leave on a biostatistics fellowship at the University of Michigan School of Public Health. W. D. JOHNSON, assistant director, is in charge of the division during Mr. Aase's absence.

ELWYN N. AKERS, M.D., former chief, Obstetrics and Gynecology Service, General Hospitals, U. S. Army, has been named chief, Maternal and Child Health and Crippled Children's Section, Colorado State Health Department.

CHARLES E. BAKER, M.D., former director, Carter, Marshall, and Murray Counties Health Department, Oklahoma, is now a resident in pathology at St. Anthony's Hospital, Oklahoma City.

RODNEY R. BEARD, M.D., M.P.H.,* professor and executive officer, Department of Preventive Medicine and director of rehabilitation services, Stanford University School of Medicine, and clinical professor of occupational health, University of California School of Public Health, has been appointed to the National Advisory Heart Council of the Public Health Service.

B. E. BOOTHE, M.D., former director of professional education, Winter VA Hospital, Topeka, is now in charge of Mental Health Research Fellowship and Career Investigator Programs, Research Grants and Fellowships Branch, National Institute of Mental Health.

JEANNE BRAND, M.D., former research assistant to the president, Carnegie Corporation, has been appointed medical research program specialist, Research Grants and Fellowships Branch, National Institute of Mental Health.

SAMUEL L. BUKER, Ph.D.,† former chief clinical psychologist, Montana State Hospital and Department of Mental Hygiene, is now mental health consultant in psychology, Public Health Service, assigned to the Kansas City Regional Office.

JAMES N. BURROWS, former administrator, Louisville Rehabilitation Center, has been named director of patient programs, Institute for the Crippled and Disabled, New York City.

G. M. BYINGTON, M.D., Dr.P.H.,* director of Palo Alto Branch Health Office of Santa Clara County Health Department, has retired.

SIDNEY B. CLARK, M.D., M.P.H.,* formerly in charge of the field office of the Pan American Sanitary Bureau, El Paso, Tex., has been appointed assistant director, San Diego Department of Public Health, succeeding ALVIN R. LEONARD, M.D.,† resigned to become director of public health, Berkeley.

CARLOS DIAZ COLLER, M.D., M.P.H., former assistant director of experimental studies in public health, Mexico Ministry of Public Health, has been promoted to director of the division, succeeding JOSE ZOZAYA, M.D., Dr.P.H., deceased.

JOHN C. CUTLER, M.D.,* former chief program officer, Bureau of State Services, has been named assistant director, National Institute of Allergy and Infectious Diseases, Public Health Service, Bethesda, Md.

ANNE M. DRISLANE, M.D.,* assistant director, has been appointed acting director, Bureau of Maternal and Child Health, New York State Health Department, while the director, ALFRED YANKAUER, M.D.,* is on leave of absence to serve with WHO as a medical officer in India.

RALPH T. ESTERQUEST, director and secretary, Midwest Inter-Library Center and Corporation of Chicago, has been named librarian, Harvard Medical School, School of Dental Medicine, and School of Public Health, where he will be on the Faculties of Medicine and of Public Health.

BINAROZELLE CECILIA FERGUSON, M.S.P.H.,

* Fellow.
† Member.

former probation officer, Cook County Family Court, is now in the Health Education Department, Tuberculosis Institute of Cook County and Chicago.

JOHN F. GAINES, M.D., former director, Ottawa and Delaware Counties Health Department, Oklahoma, is now a resident in psychiatry, Central State Hospital, Norman.

MARY C. GHOSTLEY, M.D.,† former acting director, State Health District No. 1, Bemidji, Minnesota State Health Department, has retired. She has been succeeded by SIDNEY FINKELSTEIN, M.D., Bemidji subarea director, Division of Indian Health of the Public Health Service.

JAMES A. GILLETT, M.D., M.P.H.,† formerly in private practice in Australia, is the first health officer, Northern Regional office, Alaska Department of Health, and health officer, Fairbanks.

MARION HICKS, R.N., formerly with the Onondaga (N.Y.) County Public Health Nursing Service, is now on the staff of the Greater Anchorage Health District, Alaska Territorial Health Department.

THEODORE H. INGALLS, M.D.,* associate professor of epidemiology, Harvard University School of Public Health, Boston, has been appointed professor of preventive medicine and epidemiology at the University of Pennsylvania.

EVELYN V. JOHNSON, M.D.,† associate director, Maricopa County (Ariz.) Health Department, has resigned.

TROIS E. JOHNSON, M.D., M.P.H.,† Public Health Service officer on loan to the International Cooperation Administration, has been transferred from Mexico City to a similar position as chief of the U. S. Mission's Division of Health to Colombo, Ceylon. His address is ICA, American Embassy, Colombo, Ceylon, Department of State Mail Room, Washington 25, D. C.

CHARLES A. LAKAYTIS, M.D., former health officer, Platte County Health Department, is health officer of District No. 1, the Missouri Division of Health, Cameron.

ROSEMARY R. LARKIN, M.D., formerly in private practice, is now health officer, District No. 4, Missouri Division of Health, headquarters in Washington.

CLAYTON G. LOOSLI, M.D.,* professor of medicine and chief, Section of Preventive Medicine, University of Chicago, has been appointed dean, University of Southern California School of Medicine, Los Angeles, effective July, 1958.

JAMES V. LOWRY, M.D., former medical officer in charge of the Public Health Service Hospital, Lexington, Ky., has been appointed deputy chief, Bureau of Medical Services, Public Health Service, with the rank of Assistant Surgeon General.

NTINOS C. MYRIANTHOPOULOS, M.D., former counselor and researcher in human genetics, University of Minnesota, is now on the staff of the Epidemiology Branch, National Institute of Neurological Diseases and Blindness.

BENJAMIN L. NEWELL, M.D., former district medical officer, Eighth Coast Guard District, Public Health Service, has been appointed district medical officer in charge of St. Helena, Tangipahoa and St. Bernard Parishes, Louisiana.

GUY R. POST, M.D.,* former director, Parkersburg-Wood County (W.Va.) Health Department, has been named director, Marion County Health Department.

PERRY F. PRATHER, M.D.,* director, Maryland State Department of Health, through a Commonwealth Fund Fellowship has recently spent six weeks studying public health programs with particular reference to the chronically ill and aged in England, Denmark, Finland, Netherlands, Norway, Scotland and Sweden.

EDWARD J. PUSCAS, M.S.P.H.,† former district sanitarian, Ohio State Department of Health, has been appointed health commissioner, Painesville.

MABEL RICKETT, M.P.H.,† former health educator, Seattle-King County Health Department, has been appointed a health educator, Montana State Board of Health.

ALEXANDER RIHM, JR.,† already serving as acting executive secretary, has been appointed executive secretary, Air Pollution Control Board, New York State Health Department.

JOHN I. RONEY, former senior campaign director, Ketchum, Inc., of Pittsburgh, has been named executive director, National Nephrosis Foundation, New York City.

PAUL F. RUSSELL, M.D.,* Rockefeller Foundation, has received a special award from Colby Junior College, New London, N. H., for his leadership in combating the disease of malaria and eliminating this scourge from many areas of the world.

LORAINE SCHMIDT, M.D.,† former director, Creek, Roger, and Mayes Counties Health Department, Oklahoma, is now a resident in psychiatry, Central State Hospital, Norman.

IRVING SIMOS, M.D., former clinical psychologist, VA Hospital, Perry Point, Md., is now executive secretary, Mental Health Small Grants Review Committee, Research Grants

* Fellow.
† Member.

and Fellowships Branch, National Institute of Mental Health.

PHILLIP SIROTKIN, Ph.D., former assistant professor of political science, Wellesley College, has been appointed assistant director for the mental health training and research project being sponsored by the Western Interstate Commission.

JOHN SNYDER, D.D.S.,† formerly in private practice, has been appointed assistant chief, Section of Dental Health, Minnesota Department of Health.

ALEX J. STEIGMAN, M.D.,* chairman, Departpartment of Pediatrics, University of Louisville is spending three months as visiting director of professional education at the Kauikeolani Children's Hospital, Honolulu, where IRVINE MCQUARRIE, M.D., formerly in this position has retired.

JOSEPH B. STOCKLEN, M.D.,* controller of tuberculosis, Cuyahoga County, Ohio, and clinical professor of preventive medicine, Western Reserve School of Medicine, has been awarded the 1957 Dearholt Medal, highest award of the annual Mississippi Valley Conference on Tuberculosis.

GUNNAR E. SYDOW, D.D.S., M.P.H.,† who recently completed his work for the M.P.H. degree at the University of Minnesota School of Public Health, is now director, Division of Dental Health, South Dakota Department of Health.

GERTRUDE SZADZEWICZ, former associate, Personnel and Training Division, National Tuberculosis Association, is now executive director, Alaska Tuberculosis Association, Juneau.

WILSON L. TAYLOR, M.D., former research assistant professor, Institute of Communications Research, University of Illinois, is now research psychologist, Research Grants and Fellowships Branch, National Institute of Mental Health.

EDWARD S. WEISS,* former chief field statistician, Occupational Health Program, Taft Sanitary Engineering Center, Cincinnati, Ohio, has been appointed chief, Division of Biostatistics, Allegheny County Health Department, Pittsburgh.

DON E. WILCOX, M.D., is acting director, Kansas City-Wyandotte County Health Department, during the absence of NELLIE G. WALKER, M.D.,† on educational leave at the Graduate School of Public Health, University of North Carolina.

MARY JANE WILLIAMS, nursing education consultant, Tuberculosis Nursing Advisory, National League for Nursing, has resigned to marry MERVYN EWART and has been succeeded by RUTH LEININGER, former instructor in tuberculosis nursing, Colorado University School of Nursing.

EVELYN J. WITTE, M.P.H.,† is acting director, Division of Health Education, Wyoming State Health Department, during the educational leave of Director PAUL R. MICO at the University of California School of Public Health.

* Fellow.
† Member.

## DEATHS

ELLEN L. BRADLEY of Atherton, Calif. (Public Health Nursing Section).

ETTORE CIAMPOLINI, M.D., Ph.D.,† of New Haven, Conn. in June, 1957 (Unaffiliated).

LOIS BARR COX, educational supervisor, Durham County Health Department, Durham, N. C., since 1946, on December 7, 1957 (Public Health Nursing Section).

J. W. CUTLER, M.D.,† medical director, WaWa Chest Hospital, WaWa, Pa. (Medical Care Section).

E. B. ERSKINE, M.D.,† director of health services and professor of hygiene, University of Illinois, Chicago, on October 24, 1957 (Public Health Education Section).

IRA H. LOCKWOOD, M.D.,† radiologist, Research Clinic Blue Cross and Blue Shield, Kansas City, Mo., on July 28, 1957 (Public Health Education Section).

HENRY S. PATTERSON, M.D.,† cardiologist and general practitioner in New York for fifty years and exhibitor of watercolors in art exhibitions, on December 10 at the age of 83 (Unaffiliated).

IVAN SAPHRA, M.D.,* associate bacteriologist, Beth Israel Hospital, New York City on October 7, 1957 in England while on a lecture tour. (Laboratory Section).

WILBUR S. STAKES, M.D.,† health officer, Patchogue, N. Y., in March, 1957 (Maternal and Child Health Section).

LUCILLE DUNN FULLER TIBONI, R.N., wife of EMIL A. TIBONI, and former member of the APHA Public Health Nursing Section, on October 18, 1957.

W. J. YOUNG, M.D.,† Auburn, Me., December 8, 1957 (Medical Care Section).

## CONFERENCES AND DATES

**State and Regional Public Health Meetings:**

Georgia Public Health Association. De Soto Hotel, Savannah. April 14-16.

Illinois Public Health Association. Pere Marquette Hotel, Peoria. April 9-11.

North Dakota Public Health Association. Clarence Parker Hotel, Minot, N. D. March 24–25.

Oklahoma Public Health Association. Oklahoma City. March 5.

Public Health Association of New York City. Donnell Public Library Branch, New York, N. Y. March 4.

Texas Public Health Association. Hotel Baker, Dallas. February 23–26.

**Meetings of Other Organizations Coming in February, March, and April:**

American Academy of Occupational Medicine. Savoy Plaza Hotel, New York, N. Y. February 12–14.

American Orthopsychiatric Association. Hotels Commodore and Roosevelt, New York, N. Y. March 6–8.

American Water Works Association. Annual Conference. Dallas, Tex. April 20–25.

Annual Institute for Workers in Parentage Education. Teachers College, New York, N. Y. March 25–26.

Child Study Association of America. Annual Conference. Hotel Roosevelt, New York, N. Y. March 24.

Eastern States Health Education Conference. New York Academy of Medicine. New York, N. Y. April 24–25.

International Atomic Exposition, Inc. Chicago Amphitheatre, Chicago, Ill. March 17–21.

National Advisory Committee on Local Health Departments in conjunction with the National Health Forum. Philadelphia, Pa. March 18.

National Council on Alcoholism. New York, N. Y. March 26–28.

National Health Forum, National Health Council. Sheraton Hotel, Philadelphia, Pa. March 18–20.

National Social Welfare Association. New York, N. Y. (Spring meeting). April 16.

National Society for the Prevention of Blindness. Philadelphia, Pa. March 12–14.

Pan American Medical Women's Alliance. McAllister Hotel, Miami, Fla. April 14–17.

Public Health Conference on Records and Statistics. Washington, D. C. March 24–28.

United Community Funds and Councils of America (Biennial). Cleveland, Ohio. February 24–28.


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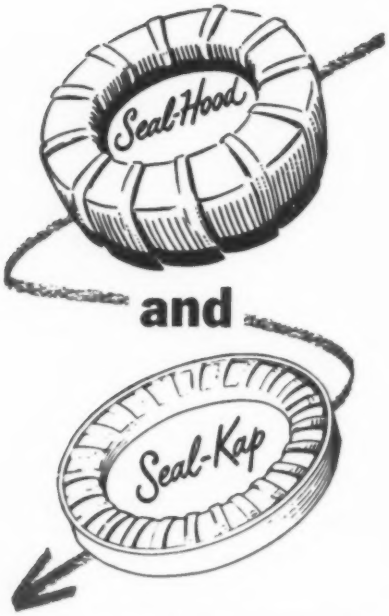


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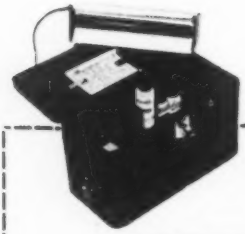

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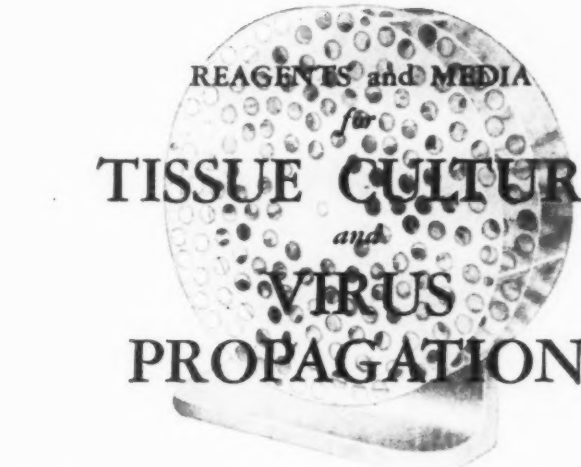

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